





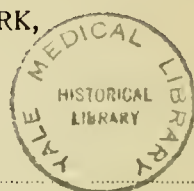
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TRANSACTIONS

OF THE

Connecticut  
State Dental Association

AT ITS

Forty-fifth Annual Convention

HELD AT

WATERBURY, CONN.

April 20 and 21, 1909.

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PHILADELPHIA  
PRESS OF THE "DENTAL COSMOS"

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1909





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# TRANSACTIONS

OF THE

## Connecticut State Dental Association,

AT ITS

### FORTY-FIFTH ANNUAL CONVENTION,

HELD AT

#### Waterbury, Conn., April 20 and 21, 1909.

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#### TUESDAY—Morning Session.

THE forty-fifth annual convention of the Connecticut State Dental Association was held in Leavenworth Hall, Waterbury, Conn., on Tuesday and Wednesday, April 20 and 21, 1909.

The first meeting was called to order on Tuesday morning at 11 o'clock by the president, Dr. W. O. Beecher of Waterbury, Conn.

The reading of the minutes of the last meeting was on motion dispensed with, on account of their having appeared in the printed Transactions.

The next order of business was the report of the treasurer, Dr. F. T. MURLESS, Jr., Hartford, as follows:

#### TREASURER'S REPORT.

WATERBURY, April 20, 1909.

##### *Receipts.*

From Dr. F. W. Brown .....	\$750.65
“ other sources .....	5.00
“ dues .....	352.00
Total .....	<u>\$1107.65</u>

##### *Disbursements.*

Expenses to date as per vouchers....	<u>\$621.52</u>
Balance on hand as per check-book..	\$486.13
F. T. MURLESS, JR.	

Motion was made and carried that the Treasurer's report be received and referred to the Executive Committee to be audited.

## REPORT OF THE BOARD OF CENSORS.

The next order of business was the report of the Board of Censors on applications for membership, as follows:

Thomas W. Gibbs, Waterbury.  
J. L. Loftus, Meriden.  
William J. McGrath, Shelton.  
Thomas A. Crowley, Norwich.  
William M. Degnan, Southington.  
Maurice D. Berman, Waterbury.  
Leslie A. Spelman, Hartford.  
Charles A. Humphreys, Hartford.  
William T. Barto, Hartford.  
Henry E. Bartle, Lakeville.  
Lester D. Lockwood, Bridgeport.  
Arthur E. Rogers, Waterbury.  
Arthur E. Guilford, Torrington.  
H. C. Roff, Naugatuck.  
P. E. Sullivan, Wallingford.

Motion was made that the secretary cast one ballot for the list of applicants as a whole.

The motion was carried, and the applicants were declared elected to membership.

The next order of business was the election of officers for the ensuing year.

The President on motion was instructed to appoint the following as a nominating committee to present nominations for officers for the ensuing year: Dr. E. B. Griffith, Dr. A. W. Crosby, and Dr. F. Hindsley.

The Secretary then read a communication from the Columbus Dental Society

regarding the Miller Memorial Fund, soliciting a contribution from the society for this fund.

Motion was made and carried that the communication be accepted and referred to the Board of Censors with power to act. This motion also to include the International Miller Memorial Fund.

The Secretary read a communication from Dr. J. D. Patterson, Kansas City, Mo., regarding the plan of reorganization of the National Dental Association.

On motion the communication was received and referred to the Board of Censors with instructions that after they had made further inquiries as to the plan of organization, they report the matter back to the society for action.

The Secretary then read a communication from Dr. B. L. Thorpe, St. Louis, Mo., regarding the Fifth International Dental Congress to be held in Berlin in August 1909, urging a good representation from the Connecticut Society at the congress.

Motion was made and carried that the communication be received and placed on file.

Dr. F. T. Murlless, Jr., occupied the chair while the president, Dr. W. O. BEECHER, read his annual address, as found on following pages.

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## PRESIDENT'S ADDRESS.

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By W. O. BEECHER, D.D.S., Waterbury.

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I ESTEEM it a high honor and privilege to have been chosen to preside over the deliberations of this the forty-fifth annual convention of the Connecticut State Dental Association, and I consider it an even greater honor to welcome you, members and guests of this association, to the first convention ever held in this city of Waterbury—the Brass City of our commonwealth. It is not my intention to give you a lengthy discourse on the scientific principles of dentistry, for such matters will be well taken care of by the able men whom we are fortunate enough to have with us at this time.

Before offering you a few suggestions that have occurred to me during the year I have held the office of president, I wish to thank my fellow officers and members of the Board of Censors, also the members of the different committees who have so ably and tirelessly supported me by their efforts. Whatever success may be attained at this meeting is wholly due to them, and the credit is theirs alone.

There are several subjects of deep interest which should concern every member of this association. First among these I consider to be the examination of the teeth of children in the public and parochial schools. This to me is a matter of vital importance, not alone for

the dentist, but for the welfare of the community at large from the standpoint of health and hygiene, as every one of us can see in our daily practice evidence of the lamentable condition among children whose mouths we have to examine, this being particularly true of the children of the poorer classes. Such a condition lessens their mental and physical capacity, making them less capable and able of application and comprehension, poorer students, and therefore less desirable prospective citizens of their respective communities, to say nothing about the danger of infection and contagion of other children who are compelled to come in contact with them.

Too much pressure cannot be brought to bear upon the city, town, and state officials who have our schools in charge that they may see this matter in the same light as the medical and dental professions view it, and some concerted move should be made by our state and local societies to bring about some action whereby the children in the schools, both public and parochial, should receive better dental instruction and an oral examination, that their parents may become enlightened and thus know the true condition that exists in the mouths of their children, particularly those between the

ages of six and twelve years. This responsibility lies with us as a profession—a responsibility which we should not shirk, not only as a profession, but as good eitizens of the community in which we live.

There seems to be a lamentable weakness in the presently existing dental laws, which weakness is being taken advantage of by a certain few who, by the advice of counsel, are able to practice dentistry illegally, and baffle the efforts of county health officers to successfully prosecute them. Our law should be strengthened and improved, and the technical parts more definitely defined, so that there can be no loophole in the way of technicalities that would make evasion of the law possible. This matter is now in the hands of the Legislative Committee and of the Dental Commissioners, who are giving the matter their best consideration, endeavoring to frame a law that will meet the exigencies of the ease. You should, for your own protection, take a deeper interest in matters of this nature, be more frequent in attendance at the meetings of the Committee of Public Health and Safety—concern yourselves with all subjects pertaining to dental legislation, not only for your own protection, but for the protection and dignity of the profession in general and the protection of the public, that they may not fall into the hands of illegal and unscrupulous practitioners.

Regarding the matter of the appointment of dental commissioners, I believe this should rest in the hands of the state association, thus not making the appointment one of political barter, as it sometimes now seems to be, for all matters of education should be beyond the reach of political influence. This would assure the appointment of the best representa-

tive men of the profession on our state commission, and put our commission on a level with those of other states, and also render it equal to that of the medical profession. Until this end, however, can be achieved, we must make the best of the conditions as they are at the present time, and by what political influence we possess bring about the best appointments possible, thus adapting ourselves to the situation—for suecess is only attained by adapting ourselves to the conditions in which we are compelled to labor.

I would also advocate more frequent meetings, say one evening meeting each in Oetober and January, and the reading of a paper by some able man on some interesting subject would be a benefit to us all. These meetings could be held in different parts of the state within easy access, thus assuring us of a good attendance, bringing us into closer touch with each other, promoting good-fellowship, and tending to make our association one harmonious working body. The benefits we would derive, namely, an increased membership and a more active interest on the part of our present members, would more than offset the expense these meetings would entail. The idea of more frequent meetings occurred to me too late, else I should have endeavored to put it into effect during my term of office. I would also recommend a closer affiliation of our state dental organization with the National Association, and advise all who feel inclined, to join the National Assocoiation; I would also advocate a eloser bond of union between the state and local societies, advising that the state organization as a parent organization foster and keep a watchful eye over the local societies, and aid and assist them in every possible way, and in turn, I



think, the local societies should reciprocate in assisting the state organization, thus connecting the chain. This would bring about a closer bond of union in the profession at large.

Our finances are, at present, in a somewhat better condition than they were two or three years ago, thanks to the carefulness and the watchful eye of my predecessor, Dr. Hindsley of Bridgeport, but there is still room for improvement. Our membership is increasing, but not as rapidly as could be desired, and a more active canvass should be made, that all ethical and desirable men may become members and thus strengthen our membership and improve our financial condition.

The present convention is to be conducted along somewhat different lines than have heretofore been adhered to, in that exhibits have been by invitation confined to dental houses and exhibits of dental specialties alone, placing the exhibit under the control of the state association and eliminating, as far as possible, the mercenary spirit that has here-

tofore been shown, thus putting us on our own basis and giving us a more ethical standing. No advertising has been allowed in the program, thus eliminating another undesirable feature. We have endeavored to secure a larger number of clinicians, devoting two afternoons to clinics, instead of one as before, and I am happy to say that a large number of these are given by members of our own organization, which I think shows a more active interest on the part of the members.

These innovations are somewhat of an experimental nature, but I hope they will meet with approval of the association and thus merit their continuance in the future.

I sincerely hope you will receive much enjoyment and instruction from the different sessions of this meeting, and the benefits you may derive from them may be carried out in your daily work with good results to the public which you serve, increasing your ability in your profession and making better dentists, and thereby better citizens.

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### DISCUSSION.

DR. O. T. RULE, Meriden. The examination of children's teeth is of the greatest importance for several reasons.

If only one thing were accomplished, viz, the enlightening of the parents' minds regarding the fact that the first permanent molar is not a deciduous tooth, a very great deal of good would be done. But when we consider that badly decayed teeth may have a direct bearing on the

health of the little patients, and may be the breeding-place of germs that may spread contagion to other children, then the subject assumes still greater importance.

Any plan, therefore, to bring this prominently before the public whom we individually serve, would surely be welcomed by each one of us.

Dr. I. B. STILSON, Stamford. I

should like to commend the holding of more frequent meetings as advocated by the president. If we could come together two or three times a year, have a few papers read, and discuss interesting matters, it would in my belief help our society. I for one should be glad to attend such meetings, and if a meeting-place at a central point in the state could be selected, many of the members would be willing to attend two or three times a year.

DR. C. W. STRANG, Bridgeport. Probably all recognize the very great importance of the care that should be given to children's teeth, but we also know that it is only a small per cent. of the children even of cultured, educated New England, that are receiving proper service in the care of their teeth. The larger portion of the children are uncared for, and their teeth are going to wreck and ruin. "A stitch in time saves nine"—we all realize the truth of the proverb in our practice, and as a result the dental practitioner of the present time tries to see his patients two, three, four, five, and in some cases six times a year, and some are going so far as to see their patients even oftener than that for oral prophylaxis work. One of the greatest misfortunes that can come to an individual is the loss of the natural teeth, and what is lost in childhood cannot be regained at a later period. If the examination of children's teeth is to be attended to properly, it must be largely done by the young men of the profession. They have the time, the vitality, and the physical force to attend to this work. The middle-aged practitioner and those advanced in years have not the amount of vitality to spend outside of the requirements of their own office and practice, although it may be their hearts'

desire to expend their efforts in that direction. The question then is: Are you liberal enough to take up this work and carry it on? Our work is very different from the physician's. As I look at it, the medical practitioner can afford to do more or less charity work. He goes to the hospital and spends half an hour or an hour, and then visits his patients, and it does not require very much time for him to distribute the needed advice. With the dentist, however, very little can be accomplished in an hour; even if he gives an hour a day to poor patients, he can accomplish but very little in that time. If we are to do charity work, we must devote to it two or three hours a day, and that means a tax on the vitality that the average dental practitioner is not able to stand. Therefore it seems to me, as the matter has been presented by our worthy president, that it is for the younger men to interest themselves in this work and to carry it along with the good wishes, the sympathy, and support of the older ones. Will you do it? It is work for which you will be compensated; it is work that will bring to you compensation that is to be valued not by dollars and cents, but by the appreciation on the part of those who receive your service—and that counts for more than dollars and cents. You may not receive that appreciation at the present, but I believe that in the future there will rise up those who will say that at some time in their childhood days, when they did not have the means to pay for dental services, Dr. So-and-so was kind enough to take their case in hand and give them the services and attention and advice that in later life proved to be of inestimable value to them.

Gentlemen, this is a matter to be seriously considered. Means must be

adopted and methods planned, the outcome of which shall be the betterment of the comfort of the rising young generation.

Dr. JAMES McMANUS, Hartford, Conn. My ideas regarding charity work differ from those of a great many members of the profession. These members are very earnest and honest in the expression of their opinions, and I have the same right to feel that I am earnest and honest in the expression of my own, even though I sometimes think differently from my good friends on the subject.

Dr. Strang spoke very fittingly on this question of charity work—medical charity and dental charity. The state, the cities, and charitable people have contributed largely; they have established and endowed hospitals, and in my home city every year or two an extra contribution is granted and donations are constantly made to pay the expenses of our hospitals, which have the attendance of our best physicians and surgeons. These physicians and surgeons go to these hospitals, look at a patient, feel his pulse, take his temperature, and refer to the written report of the nurse. They rarely come in close contact with these patients. They can go into the hospital dressed in style, and leave without having come in contact with anything that would soil their clothing or even their hands. They make their calls during the day on poor patients, and it is an easy matter for them, as they drive around in their autos and carriages, to stop at a house, see a patient for a minute or so, and write a prescription for him. In his hospital and private practice among poor patients the physician often gets good return for his charity work in experience and in the studying of the varying conditions and phases of different diseases as

manifested in the homes of the wealthy and the very poor.

Now, take dental charity work. There is nothing given by the public, the state, or the cities to put into commission any room in any city of the state, but one, where a person can receive dental service, consequently whatever charity work the dentist does must necessarily be done in his own office, and the majority of dentists who try to have a well-fitted office and clean surroundings are rather loath to receive very poor patients, even if a poor person should dare to go there asking for charity service. Even a first-class workman whose work is of a kind that soils his everyday apparel will suffer a good deal of pain before he will enter a well-equipped dental office and ask the dentist to do work for him, even though he be willing to pay for such service. Everything in the modern dental office is of the kind that attracts wealthy people, and as a rule, poor people do not think of going there, but if they do, they see the condition the dentist is in. If the patients are very poor and not cleanly, the dentist hesitates naturally to put his arm around them, for he does not know what condition the head or the clothing is in. He hesitates about doing a certain class of work, and it is certain that if a well-to-do patient comes in and sees a filthy person in the chair, he rather hesitates to sit in the chair after such a patient. Charity work, in my opinion, can only be done by the dentist, if a number of citizens and such authorities as may contribute become interested enough to furnish a suitable place with proper appliances where the poor may go; then let a dentist be employed by the city or town at a reasonable salary to stay in that office as he would in his private office, and take care

of the charity patients and the school children who may need urgent emergency service.

It is all very well to talk about examination of children in schools, and I believe in examinations, if they are properly carried out, but as Dr. White stated in Boston last fall, the medical examinations in public schools are a farce. Examinations, if they are to be thoroughly conducted, will take some time. You cannot go into a schoolroom and examine fifty scholars without giving considerable time to it. School examinations are valuable in a certain way, if they are properly organized and if the means are appropriated to pay men for giving their time and attention to that work.

My idea with regard to children has been that the place to talk with children on this subject is the kindergarten, or the rooms where the youngest children are. The teachers can inaugurate a great work and carry it on and make it effective at that age better than at any other, better even than the children's parents could do by their efforts. The teacher that spends a few minutes' time two or three times a week with these little children, teaching them not only to come to school with clean hands and faces, but also with clean mouths, would do more toward obtaining good results in this direction than anybody else. If the children have not tried to have their mouths clean when they come to school have the teacher take them to one side and talk to them; this could be done before the school to produce a little spirit of emulation, and in that way, after a time, the children would gradually realize the importance of dental care. For the very poor children, have a place where they can receive emergency treatment,

and little by little teach these children to keep their hands clean and their teeth as well; by gradually working along in such a way, they will in time be willing and able to pay to the dentist a reasonable fee for his service. In order to accomplish this the younger dentists should take an interest in public affairs and clean politics tending toward the betterment of the public. If dentists in every town would work together, they could easily have a dentist on the school board and one on the board of health, and, little by little, influence could be exerted, and the attention of the public and of the civic authorities could be guided in such a way that they would make proper provision for dental charity work.

Regarding frequent meetings of the State Society, let me remind you that in the early days of this society we had semi-annual meetings. The regular annual meeting was held in Hartford, and the semi-annual meetings were held in different parts of the state. That worked well for a while, but later on it was given up. There is less necessity now for having meetings more frequently than there was at that time, because of the fact that we have many splendid, healthy local societies in Hartford, New Haven, Waterbury, New London, and Bridgeport. If we can keep up the interest in these local societies, get greater attendance, solicit more earnest work on the part of the members of these local societies, hold local meetings with dinners and sociable functions at regular intervals, and then at the end of the year come before the State Society with the best work done by the different local societies, we can accomplish more, I think, than by holding more frequent meetings of the State Society. In this way we can induce



the younger men to take more interest in the local societies and also in the State Society, and everything will go along most satisfactorily in the future.

Dr. A. D. BLACK, Chicago, Ill. I should like to speak briefly on two phases of the President's address. First, the benefits that an association like this may give to our school children. In the West we have taken much interest in the work that has been done and is being done in this respect in New England, and particularly in Massachusetts. It is a subject which, as we all know, has been more or less talked about in our state and in local societies for a good many years, and yet we might say that almost no actual results have been accomplished, further than possibly some spreading of education among our people.

I wish to mention the work that has been in progress for several years in one local society in Illinois, at Rockford. A room has been maintained in the Rockford hospital for free dental work, and the various dentists of Rockford have each given one day's time each month to operating in that room. All the work is done there free of charge. All the local dentists of the city, about twenty, take part, and they are doing a splendid work in giving free dental service to the poor of that city. I do not believe, however, that we should consider this subject—speaking of school examinations—too much from the standpoint of charity, because a very large percentage of the students in our schools need dental service, yet do not realize it, although their parents can afford to pay for it. There are two classes to be considered in the matter of public school examination work, those who are not receiving dental service, whether able to pay or not, and those who are under the care of dentists;

these two should not be confused. It has been suggested in discussions of this subject in our state that the board of examiners be permitted to examine only the teeth of those pupils who are not regularly under a dentist's care. This could be accomplished by allowing those pupils who are receiving dental service to present certificates from their dentists stating that their teeth had been examined. That is all the board of examination would require, and no regular examiner would have the right to examine such children. This would eliminate one objectionable feature of the examination, and confine it to those who really need it. One of the greatest difficulties in all matters of this kind has been the personal aspirations of some men in the profession and the jealousies of others. There have been many men who have gone into this work with no idea of getting anything out of it, and they have encountered the jealousy of others in the profession, and on the other hand, many have gone into this work with motives that were not the best.

We are working in Illinois on what may be called the other end of this proposition, and our plan, which is only partially matured at this time, is to arrange for a series of lectures on oral hygiene in the various state normal institutions, a regular course of lectures that all teachers must take. If we succeed in that, we propose to follow it up with lectures in the county normal schools, and teach the teachers something of oral hygiene and such items as they should impart to their pupils regarding the care of their teeth. The greatest difficulty in this plan is to get enough good and capable men interested to such an extent that they will devote the necessary time to it.

A word on the question of your state organization. I agree with Dr. McManus absolutely on the point that the state society should not meet more often, but you should have a closer affiliation of your local societies with the state society, and frequent meetings should be held among the local societies. Your state society cannot induce a very large percentage of your men to actively participate in the papers and discussions; it is impossible because there are too many men. In the local societies the object should be to persuade every member to do something during the year; you cannot have these local meetings too often, provided there is proper interest. The frequency of the meetings should naturally depend on the interest that is being taken in the work, but I see no reason why, in Connecticut, many of your local societies should not meet once a month. We have found it to be of great advantage for our men to come together often, take dinner, and then have a meeting following, and occasionally invite an essayist for the evening from some other section. I might mention in this connection one rule that we have followed for five years in our state society which has proved of decided benefit to the local societies; that is, the state society gives each local society the privilege once a year of inviting any member of the state society to visit them and read a paper. The local societies select these men and make all the necessary arrangements, and the state society pays the traveling expenses of the men so invited. This gives each local society the opportunity to have some outside visitor to put a little new life into the meetings. There are many things of this kind that naturally develop as the result of close affiliation between the local and the state societies. You cannot

too soon become established on the basis that most of the western states have adopted, in which the local societies are an actual part of the state society. The local societies elect their members in their own territory and they thereby become members of the state society, which makes it practically a large organization with subordinate organizations that elect men to the higher body. This enables the societies that are strong and healthy to help those that are weak. In thinly populated portions of the state, for instance, where in some cases there are only about three men to the county, and several counties are combined into one society, these men naturally have difficulty in conducting meetings, and our state society has for a number of years spent probably twice as much as the dues from some of these societies amount to in order to make their meetings interesting. We are thus enabled to keep these societies going, while as independent local societies they would not receive enough money to sustain themselves.

The proposition of a closer affiliation with the national society, by which all the state societies should be members of the national, is a good one, but I question whether the time is now ripe when such a movement can be carried out successfully, for many reasons which it would not be proper to discuss now. But, before we have a national organization that will embody all or very many of the state societies, we must first have a better organization of the state societies. I think it is absolutely necessary that this should be so, before we can have the proper kind of national association; yet I believe the time for that will soon come, and then I hope this association will be organized on a better plan than that of the American Medical Association. We have

the opportunity to surpass them in at least one respect, even if they have shown us the way in many others. The one defect in their plan is that a man can be a member of his state society without being a member of the American Medical Association. I hope that our plan can be arranged in such a way that a dentist must become a member of all three—the local society, the state society, and the national body—and pay one fee for all three societies. We will then have a distinguished national association with a membership of ten or twelve thousand, which will worthily represent dentistry in America.

Dr. A. J. FLANAGAN, Springfield, Mass. This question appeals to me in this way: What in the President's address would be of benefit to me if I were practicing dentistry in Connecticut? and on this I am going to talk. If your interests are the same as mine have been in the past, you will appreciate what I am going to say on this subject.

In the first place, I wish to commend the president for having given us a most businesslike, that is, a most epigrammatic, telling, and concise address. If a member of any calling has even a very small ideal of professional ability and honesty within him, he yet represents a part of that calling—and it is better to be a small part of a good calling than to be a big part of a poor calling. In all great movements of world-wide importance a few individuals have started the ball rolling. If the history of the world proves anything, it must be equally true that we are confronting a like condition in our own calling. I am interested in dental charity, because I believe that we have certain altruistic duties toward the public, and I am vitally in-

terested in the question of educating the people to the necessity of oral hygiene, and to the importance of our calling in the field of preventing disease. How are we going to accomplish this? Suppose I were practicing here in Connecticut; what benefit would this movement be to my profession, and how can it be carried out? If you have in your normal schools teachers that are going forth to teach children, does it not appeal to you as a natural starting-point for this society to select some representatives that can give an address on hygiene to these teachers? Would that not be a concrete something that these teachers could take away with them? Again, if you have certain philanthropic or charity organizations that meet in certain parts of the state during the year, would it not be most practical to have the state society send some men to address these meetings? There are also certain newspapers published in this state—and I am well acquainted with one in this city, the *Waterbury American*—whose editorials are read the world over; now, would it not be proper to prepare articles in simple language to educate the people in the knowledge of dentistry? There is at the present time in various parts of the country a great national agitation against tuberculosis. It is within the province of every intelligent dentist to notice a few phases of tuberculosis that come under his observation. What is to prevent the dental profession from taking part in the public demonstration that is now being held all over the country? For instance, what would prevent us from showing certain models and certain statistics demonstrating the part which constricted arches play in shutting out the air-supply from the lungs? Physicians have shown the



deleterious effects of adenoids, and why should not we show certain deleterious conditions in the mouth? That is a concrete something which the average person can grasp, but we have not done it. Let us take up this work. I might go on and mention case after case where we could do wonders; but who is going to take the initiative? Somebody will have to start the ball rolling.

If the National Association had never accomplished anything except the dental catechism which they published on the care of the teeth, they would have accomplished a great work. If you are interested in educating your patients along that line, send for these pamphlets that have been authorized by the National Association, and in putting forth such literature your patients and others cannot say that you are solely interested in the financial end.

In closing let me say: In every calling there is jealousy, there is envy, even in the church, and why should we in this imperfect world expect to accomplish perfect results in an imperfect environment? But let us try to elevate our calling, and let us consider it the duty of each humble representative to do his share in the advancement of the profession, for that means the advancement of each individual.

Dr. E. S. GAYLORD, New Haven. After listening to the very interesting discussion upon this most admirable address, it seems entirely unnecessary that I should add a word. In regard to the meetings of this organization, it occurred to me that we might pattern our society after the Massachusetts society, which has district societies, and have the district societies represent something that would lead up to the state society. We

have in different sections of the state organizations which could be converted into district societies, and an incentive might be created among these societies to exceed each other in the number of members which they send to the state society. Dr. Black emphasized that these local societies should select different essayists from the state society; in that way it seems to me great interest could be created in the local societies, and through them in the state society.

Dr. BEECHER (closing the discussion). My purpose in advocating dental inspection and examination in public schools is simply to agitate the matter. You will not accomplish anything, as Dr. Black said last night, without agitating the subject. If you stir up matters, then practical plans to bring about the best results are possible, and we can work out the best plans to meet conditions as they present themselves.

Dr. Black covered the question of frequent meetings in a different way than I had thought of, but the point is that from a financial standpoint the local organizations as we have them now are not in a position to go to the expense of holding frequent meetings without the aid of the state society, and many times there are not more than ten or twelve men in attendance. Then, again, Dr. Black has given us an instance of a society which has eleven hundred members; in an organization of that kind the best results are obtained in a different way from what I had thought of. My idea is that the men should get together more than once a year. We have dozens of men that we do not see more than once a year, and then some men attend the annual meetings in one year and others in another year, and in that way they do not



get to see each other very often. If we have more meetings and have a closer union and affiliation, the men would have more opportunity of rubbing elbows with each other and become better acquainted.

I wish to thank the gentlemen for the very liberal discussion of my paper, and for the large attendance at this meeting and the attention given to my address.

Motion was made that the President's address be accepted and placed on file.

Motion carried.

The next order of business as announced by the chair was the reading of a paper by Dr. CARROLL B. ADAMS, Bridgeport, entitled "An Antiseptic Cement." (See following page.)

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## AN ANTISEPTIC CEMENT.

By Dr. CARROLL B. ADAMS, Bridgeport.

THE cause which has led the author to the consideration of this subject is familiar to dentists, that is, the putrid condition of all zinc phosphate used for setting crowns or for fillings after having been in the mouth a longer or shorter time.

Zinc phosphate is sufficiently porous to absorb liquids from the mouth, and these liquids, carrying in solution organic matter necessarily infected, produce a condition from which decomposition and the putridity referred to result, producing infection of the susceptible adjacent tissues. I believe that the cause of death of tooth-pulps under zinc phosphate cappings is to be looked for in this infection rather than in the phosphoric acid to which it has been ascribed, as it is also a cause of infection of the gum margins.

In endeavoring to combat the situation the following deductions have been drawn. Find a material that may be added to the cement which will meet the following requirements: It must not be decomposed by phosphoric acid, must not be soluble in water, must not be volatile, and must be a germicide, or at least antiseptic.

After a consideration of various substances, thymol has been selected as the best. Thymol is a camphor of the oil

of thyme, scarcely soluble in water, but readily soluble in alcohol, and a powerful antiseptic.

The method presented to you consists in taking the powder of the zinc phosphate cement and triturating it with 5 per cent. to 10 per cent. of its weight of thymol. When required for use, the powder and liquid are mixed and applied in the usual way.

The application of this cement is suitable in all cases where cement has been indicated heretofore; it has been successfully used in the following ways:

In deep cavities in deciduous teeth, when the little patient will tolerate only short operations and the pulp has been approached too closely to permit the insertion of an amalgam filling, this cement may be placed in position and coated with a quickly drying varnish, giving good results.

As a pulp-capping it has given much better results than any other material which I have been able to obtain. In twelve years' use of this cement as a pulp-capping I have found only three cases where the pulps had decomposed, but they were not putrid.

This cement is indicated as a foundation in very large and deep cavities when gold or amalgam is to be used. In this

class of cases it is not always possible or practical to remove all of the affected dentin, and the use of this cement has given very gratifying results. From this I draw the deduction that the antiseptic properties of the cement overcome the infection in the tubules of dentin, thereby preventing irritation and stimulation of the odontoblasts and the formation of secondary dentin.

After treating and filling the pulp-canals, this cement should be used as a foundation for gold or amalgam fillings.

The buccal cavities of molars have been a source of trouble to most operators. In the mouths of patients where fermentation is nearly constant, buccal cavities with metal fillings soon show recurrence of decay at the cervical margin, or if gutta-percha is used, expansion results, which is not pleasing. In such cases an antiseptic cement has given good results as a more or less permanent filling, apparently for the following reasons: The antiseptic properties reduce

or prevent fermentation in the immediate locality, thereby hindering the formation of lactic acid.

The last but not the least of the applications of this cement is for setting crowns and bridges.

The addition of thymol to the cement does not change its working qualities or density. The durability of this material in exposed fillings is apparently enhanced for the reason before stated, namely, that fermentation and formation of lactic acid are reduced. In mouths where milk of magnesia has been used and a nearly alkaline condition is maintained, the durability of this cement is remarkable.

As to preserving this cement in the office, it is well to keep the bottles in a warm place, but as thymol melts at 90° F., ordinary room temperature must not be much exceeded.

"An antiseptic cement" is not intended for permanent fillings, but for the uses described, and may prove itself a valuable accessory in dental operations.

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### DISCUSSION.

Dr. C. W. STRANG, Bridgeport. No more important subject has been brought before us recently than that presented by Dr. Adams in his paper. You will all agree with me that the quintessence of nastiness is reached in the oxyphosphate in a crown or bridge that has been in service a few years. Any method, therefore, by which the impurities, the unwholesomeness, and the disagreeable effects of the oxyphosphate after a time in the mouth can be prevented, will be

heartily welcomed. I was very forcibly impressed with the porosity of the oxyphosphate fully fifteen years ago, and the incident, which I will here relate, may be of interest to you. A young lady came into my office with a large cavity and an exposed pulp in a bicuspid, the cavity extending above the margin of the gum; in order to prevent the arsenic from doing harm, the rubber dam was adjusted, the decay removed, the arsenic applied and carefully covered with an oxyphos-

phate filling, and the patient dismissed. When the patient returned, viz, about thirty-six hours after the application, I was astonished to find unmistakable evidence of arsenic poisoning on the gums. I could hardly believe my eyes, and asked myself if it were possible that the oxyphosphate had allowed the arsenic to percolate through the filling.

Only a little while afterward one of my old patients had the misfortune to break off the labial plate of enamel of a central incisor. The pulp was not exposed, but nearly so, and the patient being somewhat timid would not allow its extirpation. At that time we did not know of the advantages of cocain pressure anesthesia, and I made an arsenical application as near the pulp as possible, covering it with oxyphosphate, which was the only suitable material. When the patient returned for the second treatment there was an eschar on the inner portion of the lip directly over the oxyphosphate, and then I was convinced that oxyphosphate was one of the worst filling materials for covering arsenical applications. I would a hundred times rather trust cotton saturated with sandarac varnish for preventing the arsenic from leaking and injuring the soft tissues than use oxyphosphate to retain the arsenical application. I have heard gentlemen speak of carefully sterilizing root-canals, filling them with oxyphosphate, and then over that placing a permanent filling, and they seemed to flatter themselves that they were giving the roots of the teeth the most perfect protection possible. These men, I think, are laboring under a very great delusion. I believe that in those cases copper oxyphosphate is a far better protection than the zinc oxyphosphate.

The preparation and the treatment of

the oxyphosphate as suggested by Dr. Adams should, it seems to me, meet with hearty approval.

Dr. E. S. GAYLORD, New Haven. I wish to say first a word of commendation of the idea which Dr. Adams has presented to us, and then a word in justice to the manufacturers. Those of us who used oxyphosphate fifteen years ago, or even ten years ago, will bear out the statement of Dr. Strang that it is a decidedly objectionable material, but, since that objection has been raised by the profession, I am sure the manufacturers have improved the character of their oxyphosphates. Notwithstanding their efforts, however, it is still objectionable in that respect, and I am very glad indeed that Dr. Adams has brought this suggestion before us. The only criticism I would offer of anything that he has said is that he has not presented this to us before. He says that he has been familiar with it for twelve years. How many valuable methods have been withheld for twelve years? So many are brought before us and recommended as very essential, important, and valuable, after they have been tried perhaps only a few months.

I hope to stimulate Dr. Strang and draw him out in regard to his method of using oxyphosphate in connection with amalgam, and in regard to the condition in which he finds the oxyphosphate after having used it in that way.

Dr. STRANG. In answer to Dr. Gaylord's question, I would say that I have never used the combination of amalgam and oxyphosphate for setting crowns, and am therefore not able to give him any light upon that subject; but as far as fillings are concerned, I believe that this combination is more wholesome and less subject to infection than—I will not say

the very best gold fillings that have been inserted and then removed from the teeth—but certainly less subject to the infection and the impurity connected with it than is found in about ninety-five per cent. of the gold fillings inserted, particularly those that have been built upon a mat of soft foil. If you properly prepare the cavity and insert the combination filling, with which I have been somewhat familiar since 1890, you can hardly tell about the condition of the fillings, because they do not come out in a mass. If it is necessary to remove them, they have to be taken out in small particles; you cannot get the filling out in a mass, because it adheres so firmly to the walls of the cavity. I do not think that fillings of oxyphosphate and amalgam are at all permeated by the mouth secretions—at least I have never suspected it. This combination, I think, is impervious to the secretions of the oral cavity, and is one of the very best protections that tooth structure can have. There is in my opinion no material that affords such perfect protection to tooth structure as the combination of amalgam and oxyphosphate—and this opinion is based on an experience of nearly twenty years.

Dr. SPICER. In what proportion do you combine them in fillings?

Dr. STRANG. In answer to that question I would say that I am on the program for a clinic this afternoon, and I can give all the information pertaining to that subject better than I can at the present time, because this question seems to me to be foreign to the subject we have before us just now.

Dr. A. J. FLANAGAN, Springfield, Mass. Dr. Strang tells us that the question of the mixture of the amalgam and cement is foreign to the subject, but I disagree with Dr. Strang. I believe that

he has a duty not only toward the dentists of Connecticut but also toward those of Massachusetts, because we are using the Strang method there with success.

Let us reason a little. Dr. Strang made the statement that when root-canals have been filled with oxyphosphate of copper cement he finds less—I would not say infection or bacteria, but certainly less odor—and I think we will all agree on that. If that is the case, what was it due to? Dr. Gaylord says that the makers of cements are manufacturing now an anhydrous cement. Is that your statement, doctor?

Dr. GAYLORD. Partially.

Dr. FLANAGAN. When I went to the Philadelphia Dental College, I had the privilege of visiting Dr. Flagg's laboratory quite often, which was a very fair laboratory as judged from the standard of that time; I saw some of his experiments on cements. I wonder how many men have asked what oxyphosphate cement is made from. Dr. Gaylord says that it is anhydrous. I wonder if any manufacturers in the entire world are making an oxyphosphate filling material at least ninety per cent. of the base of which is not made of a very hydrous substance known as zinc oxid. In other words, is there a cement whose base is not zinc oxid? If there is, the manufacturers have been keeping it from us hitherto; they are keeping many things from us, and we are to blame. If we are using certain kinds of drugs, is it not the duty of the dental profession to know what is in them, and what their component parts are? Dr. Strang says that he uses copper oxyphosphate with better success in root-canals. What is that made of? May his success not be due to the fact that there is a greater proportion of copper in it, and that copper has a



germicide property? Dr. Strang says it is best when incorporated in amalgam. Now, his amalgam is metal. Suppose you use a submarine alloy, composed of sixty parts of silver, thirty-five parts of tin, and five parts of copper. Any man who has practiced twenty years must have come to certain conclusions with regard to the beneficial effect of the addition of copper to amalgam. The scientists have not been able to tell us why it has this effect, but we know it has. If in the use of cement you add foreign materials, how much cement have you left? I want to warn dentists here today as to the addition of certain foreign materials to cement.

I wish to congratulate Dr. Adams on his paper; there is certainly a great deal of profit to be derived from it, and his method is worth trying; but I am one of the doubting Thomases, and why? Simply because, if you will go back in the history of dentistry, you will find in the *Dental Cosmos* of about twenty years ago that a Dr. S. S. Stowell of Pittsfield claimed that he had discovered a material that would prevent decay, and with which you could cap pulps successfully—and always prevent recurring decay. What was his powder composed of? Hydronaphthol and cement, and he promised all sorts of fine results from it; but do you hear of it today? Go back in history twenty years, and you will find that hundreds of men used it. Dr. Gaylord, didn't you use it?

Dr. GAYLORD. Yes.

Dr. STRANG. When you find me, after what I have seen, abandoning amalgam and oxyphosphate, you will find me abandoning dentistry altogether. I would be delighted to show you teeth that were filled in 1890 with amalgam and oxyphosphate, first molars, second molars,

that had been almost wrecked in early childhood, and yet these teeth are today perfectly preserved, and nothing more has been done with them except what has been done by the patient. When I have such evidence I cannot go back on the combination. I do not wish to claim any originality for that combination. I saw a statement in regard to it in one of the dental journals in about 1890, and I began experimenting with it, and what I know about it has been derived from my own experimentation and experience since that time.

Dr. FLANAGAN. I trust that Dr. Strang does not construe my discussion as opposition to his method. I have no criticism or opinion in relation to Dr. Strang's method, but I should like to know from Dr. Gaylord why he abandoned that cement. I should also like to ask Dr. Strang if he ever used that cement? I believe Dr. George A. Maxfield was another practitioner favorably inclined—at that time—to indorse this method.

Dr. STRANG. No, but I knew about the Stowell cement.

Dr. GAYLORD. I am delighted to have the opportunity to tell Dr. Flanagan why I discontinued the use of that cement. Does Dr. Flanagan recognize the fact that the material of which he speaks becomes absolutely worthless after exposure to air? It is a very unstable material, and for that reason what little efficiency it had was absolutely lost in a short time. In other words, gentlemen, it did not fill the bill, and consequently I dropped it.

Now, without any intention of discourtesy to Dr. Adams, I should like to ask Dr. Strang to give us his method of using this filling material at this time. I think this an opportune moment, and

we shall all be glad to stay and listen to him, as no doubt it will be very profitable to us all.

Dr. FLANAGAN. My motive in bringing out this point was that we are all striving for the truth, and I certainly want the best results in my practice, and am very proud of the fact that Dr. Gaylord has given his reason for doing away with that cement, because it simply illustrates the point I am getting at. Just go back to the days of the Archite cement, and think of the way we have been led astray in different kinds and combinations of filling material. We must consider very carefully the effects of mixing different medicaments with cement. I do not wish to be misconstrued as saying anything against Dr. Adams' method, because I believe that he would not offer us anything unless he believed it to be a suitable material and one worth while. I am glad, however, that Dr. Gaylord has thrown a little light on one of the materials which we were led to adopt several years ago. We have known practitioners to replace fillings with filling materials which have had added certain medicaments which have affected the lasting quality of the cement. We should make experiments with such mixtures, place them under the microscope, and find out what sort of mixture we have, and then we can work on a scientific basis and on the proper deductions, and will not be led year after year into using materials that we know nothing of.

Dr. ADAMS (closing the discussion). The questions raised by Dr. Flanagan as to previously introduced combinations are fully answered in the detail, little though it be, of my paper. I was aware of these conditions, and enumerated them in my paper intentionally and advisedly.

Dr. Gaylord seems to think that I have

intentionally withheld a valuable method, and if I have, I owe you an apology. I began using this compound about twelve of fourteen years ago, after considerable experimenting with it, and since it proved itself valuable in my opinion, I finally used all zinc phosphate cements in that way. About three years ago I thought that perhaps it was something worth writing about. I spoke to several practitioners about it, and tried to give clinics on it on several occasions, but I assure you, gentlemen, that I had to force attention to it. I came to Hartford last fall, and gave a clinic in which I presented this method and sat half a day at a table, and was asked by two men about the method.

Hydronaphthol is soluble in water, and for that reason I cast about for a long time for some effective antiseptic that would not be soluble in water. I selected a substance that chemistry tells us is soluble in twelve hundred times its volume in water; therefore I say it is scarcely soluble, and I know the permanence of its effect.

In conclusion, I am led to quote here a saying which I once heard: "I am not arguing with things, but I am simply telling you them."

Dr. C. W. STRANG, Bridgeport, was extended the privilege of explaining his method of making combination fillings of amalgam and copper oxyphosphate. Dr. Strang spoke as follows:

When I began this work, I had the idea that one amalgam was as good as another for the combination filling, and after experimenting with the different amalgams and watching the results, I have come to discard every amalgam but one. I have selected Lawrence's amalgam for the combination, because I ob-

tain better results from that than from any other amalgam; why, I cannot tell you. The amalgam that has given the poorest results is the Fellowship alloy; why it does I likewise do not know. The best results I have generally obtained in soft immature teeth. Take the case of children at about the age of nine years, with the first molars almost riddled with decay, with pulps almost exposed; these cases are the most unpromising as far as permanent operations are concerned. The rubber dam is adjusted, the decay removed, the cavity dehydrated and prepared just as thoroughly as for a gold filling, except that not quite as much tooth-structure need be sacrificed, but all the disintegrated portions of the tooth are removed and the margins are shaped as cleanly and as well defined as in a gold operation, although it does not matter if the edge is somewhat attenuated. Then all the instruments necessary for packing the material are laid in a position of ready access, because, when the material is ready to be placed in the cavity, it must be inserted without delay, as it becomes hard readily and is liable to disintegrate in packing. I then begin the preparation of the material. The amalgam is put in a mortar; about the same quantity of filings is used as required in making an amalgam filling alone; then the mercury is added and ground thoroughly with the pestle until the filings are thoroughly incorporated with the mercury. The mix should be a trifle more plastic than in a pure amalgam filling. After the filings are incorporated, the mortar is washed with alcohol, dried out with a napkin, and the mass replaced in the mortar. To this mixture about one-third in bulk of zinc oxyphosphate is added and ground up. I obtain better results with the Har-

vard oxyphosphate than with any other. Others may perhaps get as good results with other cements, but I have become accustomed to the Harvard and I am using it exclusively. I then thoroughly grind the oxyphosphate powder and amalgam with the pestle in the mortar. Then about the same quantity of phosphoric acid as would be required in mixing the oxyphosphate powder alone is poured out, and a little of the powdered amalgam is incorporated, mixing as thoroughly as if cement for setting a porcelain inlay. The powder is gradually incorporated, and then with a thick heavy spatula it is worked into a ball, and a little more of the powder is added, so that it has the consistence of putty. In that state the mixture is ready to be introduced into the cavity, which is done with burnishers at different angles, as required in cavities in different portions of the mouth.

If after two or three years there is a defect in such a filling along the cervical wall, I know that I have failed to pack the filling thoroughly at that point. I do not believe that it is in the least affected chemically by the secretions of the mouth, but is subject to change only owing to the attrition brought to bear upon it by use.

If I have to fill a very large cavity in a posterior molar, that is, one not easy of access, I do not attempt to make a mix sufficient to entirely fill the cavity, but I make two mixes. With the first mix about one-third of the cavity is filled, and after waiting two or three minutes another mix is made and the operation completed. There is a danger of trying to do too much, if the cavity is complex. In the anterior portion of the tooth, where you come to the masticating surface, do not attempt to make one mix

and fill the cavity, but make two mixes, and then be sure to make a perfect filling in all parts of the cavity. My only objection to this material is that it discolors the tooth and imparts a dark shade to the enamel walls, therefore in filling an upper second bicuspid I should not put that material against the external wall, but would flow against that wall the whitest oxyphosphate obtainable, and place the amalgam and cement combination over that. The material adheres to the tooth structure, the dentin and enamel. It is the stickiest of filling materials that I know. Five minutes after

the filling is placed, it is hard enough to be shaped up properly. It is not necessary to keep it dry more than five or ten minutes. No lasting polish can be imparted to the material; there is simply no polish to it. The appearance of such a filling is its worst feature, and because this material does not take a polish, some have condemned it without any further deliberation. It does not make a handsome filling, but it preserves the teeth most satisfactorily.

The meeting then adjourned until the evening session.

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### TUESDAY—Evening Session.

The meeting was called to order on Tuesday evening at 8 o'clock by the president, Dr. Beccher.

The first order of business was a paper

by Dr. A. D. BLACK, Chicago, Ill., entitled "Cavity Preparation Based on the Pathology of Dental Caries." (See following page.)



## CAVITY PREPARATION, BASED ON THE PATHOLOGY OF DENTAL CARIES.

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By ARTHUR D. BLACK, B.S., M.D., D.D.S., Chicago, Ill.

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THE dentist who understands the present known pathology of dental caries and the present known physical properties of filling materials, and develops the judgment and ability to execute his work accordingly, should be able to place fillings the majority of which will last throughout the lives of his patients. What we most need in the dental profession today is not so much the development of more scientific information as a better assimilation and practical application of what we have. There is the constant cry for the so-called "practical," uttered by men who are generally unwilling to read with a fair mind, to understand with good judgment, or to modify methods of procedure to make fair clinical tests of the work of our really scientific men.

It is often stated that our farmers are slower to accept and adopt scientific experimental work than almost any other class of men, and it has been necessary for our state agricultural experiment stations to demonstrate by actual field results, extending over years and years, that certain changes in methods are necessary. These stations in the corn-belt states have shown the farmers that fields side by side, with exactly the same

soil and practically the same amount of labor, can be made to produce anywhere from thirty to a hundred bushels of corn to the acre. While these facts have been known for a decade or more by most scientific farmers, it has taken years of actual results to induce the average farmer to change his methods. Even now, it is generally necessary in each community that some ultra-progressive man adopt advanced methods while his neighbors laugh at his "foolish notions," and demonstrate that the methods are right. When in the first year he raises half again as much corn per acre as his neighbors they call it an accident, when he does better the second year they begin to realize that there may be something in it, and after about the third year they all do likewise.

The dental profession has been slower than the farmers in accepting the known facts relative to the pathology of caries, and this I believe is largely because we have not had the results of "experiment stations" presented in definite form. We must have tabulations of actual results, covering thousands of operations by many men, extending over a number of years, before our men will really begin to associate pathology with treatment as

they should. If it is possible, as the writer believes, that the majority of filling operations may be really permanent, and the accomplishment of such operations requires less time and generally less effort than is now expended by the average practitioner, it will be a decided advantage to patients and to practitioners, both from the physical and the economic standpoint. It has been proved that the farmer can, by following scientific methods, raise twice or three times as much grain without material increase in his labor, and the writer believes it to be equally true that our filling operations may, by the adoption of reasonable methods of procedure based on pathology, be made to last two or three times as long, and that the operations may at the same time be performed with less pain to patients, with less difficulty for the operator, and in much less time.

This paper will be limited to a discussion of the preparation of proximal cavities in the bicuspid and molars, and for these your attention will be directed principally to the outline form of such cavities, or the positions of the various margins, based on pathology. In this connection we will consider—(1) The involvement of enamel by caries, (2) the involvement of dentin by caries, and (3) the relation of interproximal gum septum to caries.

For the purposes of this paper it will be necessary to mention only very briefly certain factors in the bacteriology of caries: (1) The micro-organisms that produce caries are always present in the mouths of all persons. (2) Some persons are susceptible to caries and others are not. (3) The conditions of susceptibility and immunity may vary in individuals at different periods of life. (4) The controlling factor seems to be

a condition of the saliva which so affects the life-processes of the organisms that caries may or may not result. So long as we do not know definitely what the salivary condition may be, we must base our treatment on the known etiology and the manifestations of the pathological process which may be observed clinically, and by examinations of sections of extracted teeth. We know that decay in the proximal surfaces of bicuspid and molars practically always begins just a little toward the gingival portion of the contact point, and not elsewhere. Anyone may convince himself of this by the examination of a few hundred teeth having small areas of (beginning) proximal decay. We know that the enamel of the entire proximal surface is calcified as a single lobe; that there is no depression, defect, or weak spot in it; that it is smooth, perfectly formed enamel. We know that the carious process in the enamel is effected by an acid produced by certain micro-organisms. This acid, if dissipated in the saliva, does not produce decay; it must be confined to the particular spot on the surface of the enamel for a considerable time. If this were not so, decay would begin elsewhere than at the particular spot. The enamel, as is well known, is composed of rods held together by a cementing substance, and this cementing substance is dissolved more rapidly by the acid than are the rods. The cementing substance may be dissolved from between the rods through the entire thickness of the enamel without the rods being very much affected, and without any of them being displaced. If we examine a tooth so affected there is no apparent change in its contour, and often, if the tooth be moist, the eye will be unable to detect the injury. If, however,

the surface be dried, the affected enamel will appear white. There is no cavity, but there is a decayed area, the surface extent of which is shown by a dull white spot. The enamel of this spot is not glossy; it is, in fact, somewhat rough on examination with a sharp instrument, which will penetrate it under slight pressure.

These white spots gradually grow larger in certain directions, particularly toward the buccal and the lingual, and gradually extend more deeply into the enamel; the area of enamel so affected has the shape of a cone, with the base of the cone on the surface and its apex toward the dentin. If we cut a section through this enamel in any plane parallel to the direction of the rods, the shape of the affected area will be triangular, with the apex of the triangle toward the dentin and its base at the surface.

The portion of the proximal surface lying toward the occlusal surface of the contact point is immune to decay, because decay is practically never found to begin there, nor to spread there on the surface of the enamel. The lingual and buccal margins of the proximal surface, constituting the angles of the tooth, are similarly immune for the same reasons. Decay never begins or spreads on the surface under the free margin of the healthy gum tissue. These are facts that anyone may verify by observation. What, then, is the pathological condition with which we have to deal in each such case? We have a surface in the central portion of which, decay begins and gradually spreads, but practically never reaches to any of the boundaries. We must conclude that the point of greatest liability to decay is this central point, and that there is a constantly lessening

variation of liability as we approach the margins.

As long as the interproximal gum septum occupies its normal or nearly its normal position, the caries must spread toward the buccal and lingual surfaces, following closely the free margin of the gingivæ. The extent of this spreading is modified by the convexity of the approximating surfaces; the more convex the surfaces, the narrower the spreading of the decay. We must therefore conclude that the width of space between the two teeth (the embrasures) deserves serious consideration—that the surface spreading of decay does not go beyond the line where the surfaces of the two teeth are a certain distance apart.

If a filling is placed in such a surface, restoring its exact contour, there will be the same accumulation and growth of organisms as previously occurred on the surface of the enamel, and the limit of the spreading of this growth on the filling and tooth-surface will be governed by exactly the same laws as was the previous growth on the enamel. If the margins of the filling have been placed in such positions that the growth of micro-organisms may extend to the surface of the enamel beyond, the acid will surely affect that enamel, and there will be a recurrence of decay. If we recognize these facts, it is surely our plain duty, when we prepare such a cavity, no matter how slight the extent of the injury to the enamel may be at the time, to place the margins in such positions that there can be no recurrence of decay on the surface of the enamel. If we do not recognize the facts stated above, it is because we are not awake to the possibilities of careful observation.

After the acid has penetrated the

enamel, its progress in the dentin is modified by the structure of the latter. In all cases there will be a lateral penetration of the dentin immediately under the surface of the enamel, and a direct penetration along the tubules toward the pulp. This results in the destruction of a more or less cone-shaped area of dentin, with the base of the cone against the enamel and its apex toward the pulp. The width of the base of this cone is determined by the structure of the dentin. If there are numerous anastomoses between the tubules at their outer ends, it will be easy for the acid to spread laterally, and the base of the cone will be large. If the dentin is more perfectly formed, giving the acid less opportunity to spread laterally, the base of the cone will be small.

It must be remembered that from the original point of beginning on the surface of the enamel, there is a spreading of caries on the surface while the penetration of the enamel is progressing; therefore often a very considerable surface area is involved before the acid reaches the dentin. Lateral decay in the dentin, resulting in the undermining of the enamel, must necessarily first undermine the enamel that is already injured on its surface, and whether the lateral decay in the dentin undermines the enamel not involved on its surface will necessarily depend on three factors: The conditions governing surface extensions on the enamel, the conditions governing rapidity of lateral extensions in the dentin, and the time elapsed after the dentin was first penetrated. There is a limit to surface extensions, as mentioned above, but there is no limit to extension in the dentin, there being a gradual progress as time passes. We may therefore have a surface extension to its limits, without the dentin being involved at all; we may

have a very small area of surface involved with extensive decay in the dentin, or any combination of conditions between these two.

The enamel is, as we know, weak and friable if the underlying dentin is decayed, and all such enamel should be cut away, except for esthetic reasons in certain positions where no stress may be brought to bear upon it. I would therefore make two rules to govern me in placing the margins of cavities occurring in these surfaces: (1) Without regard for the extent of the decay in either the enamel or dentin, I should cut away sufficient tooth-structure, either sound or decayed, to place the margins in positions where recurrence of decay cannot occur on the surface of the surrounding enamel. (2) I should place the margins as much farther in any direction as might be required by the removal of all enamel undermined by decay in the dentin.

I wish to emphasize several points in which the profession can materially improve its efficiency in the treatment of such caries. In the majority of cases, fillings should be inserted months before the decay is discovered by the present methods of making examinations of the teeth. It is the general practice not to insert fillings until there are actual cavities in the teeth. This is wrong, for the perfectly evident reason that the dentin is often seriously involved before there is any cavity in the tooth, before any enamel rods have fallen away, when only the cementing substance between the rods is dissolved. We should discover such decay before there are any cavities, by drying the teeth so that we may possibly see the whitened areas of decay, by the use of the silk floss, by using strong, small, sharply curved explorers that may be made to penetrate the



enamel that has been softened, and often by the use of a separator in order to secure better vision and better opportunity for using explorers. We often have the opportunity to examine many such surfaces with the rubber dam on, in cases in which the dam has been placed for treatments or filling operations in neighboring teeth.

There are a good many factors that might modify the width of cutting in any particular case, such as the age of the patient, our estimate of his susceptibility to caries, the appearance of the decayed area, the number of other cavities or fillings, the care of the teeth by the patient, etc. Owing to the fact that these only indicate past or present conditions and cannot be definitely relied upon as a basis for the future, they should generally have little weight in forming our decision. We can never be certain whether the patient who is immune or nearly immune today will not be extremely susceptible a year hence. We should constantly bear in mind, however, that the most essential thing is to have sufficient space between the two approximating surfaces at the line of the margin, and we may often obtain this by separating the teeth and making the filling more convex than the surface of the tooth originally was. We may in this way very materially limit the width of the cavity, and yet have the margins in safe positions.

We should remember that the interproximal gingivæ normally fill, or very nearly fill, the space between the teeth in the form of an arch with its highest point close to the contact point, and the surface extension of caries will follow the margin of this tissue, but will not extend under it. To apply the rules above mentioned in practice it is not

often necessary to cut away sound tooth-structure, even in cases in which cavities are discovered early, except in two positions, namely, at the gingivo-buccal and the gingivo-lingual angles of the cavity. If the proximal cavity, which is very frequently prepared with a rounded gingival margin, is made with sharp angles at the junction of the gingival with the buccal and lingual walls, the life of all fillings of this class would probably be at least doubled, for this cutting would remove the bulk of the most susceptible enamel remaining.

Particular attention is called to the fact that what has been said refers only to the surface outline of cavities, and has nothing whatever to do with the depth of cutting. The depth of cutting is governed entirely by the extent of the decay in the dentin. When decay of the dentin does not require it, no dentin should ever be removed to a greater depth than 1 mm. (about the length of the head of a No. 35 inverted-cone bur), and often not so deep. This is another reason why these cavities should be discovered early, before there is any decay of the dentin.

In the preparation of cavities of this class, it should be the rule to cut a step in the occlusal surface to insure the proper retention form for the filling, to give better opportunity for placing a good filling, and to eliminate the making of either a frail margin of the filling or of leaving a frail wall of enamel at the occlusal margin, as would be necessary in a simple approximal filling.

One of the most important factors in the prevention of recurrence of decay in such cases is the proper restoration of the contact point. If we may judge from our observation of the work of many operators, most of them do not trim and finish

proximal fillings to the proper form. We should test with waxed silk floss the contact of every filling with the proximating tooth. There should be a positive rounded contact, the same as we find in normal dentures. The silk should snap through, showing a single touch point, it should not drag anywhere, and should not be frayed. It should snap through in the same way from the gingival border to the occlusal surface. After the ligature is passed through from the occlusal surface to the gingival border, the ends should be held together in the occlusal direction and in the buccal direction, and in both positions the strands should be closely enough together to show that contact really takes place only at one point.

Failure to restore a proper contact frequently results in a recurrence of caries at the gingival border of the filling, no matter where the margins were placed, because, if food particles are caught between the teeth, it is only a question of time until the interproximal gingivæ will be so injured that the gingival margin of the filling will be exposed. Failure to restore a proper contact also jeopardizes the surface of the proximating tooth. On the other hand, extra separation and a prominent contact which increases the width of the embrasures not only permits the making of a narrower filling, but reduces on the surface of the proximating tooth the area that is liable to decay. If those who have not paid special attention to proper contact restoration will keep careful records for a very few years, they will observe that proximal decay frequently occurs solely on account of their neglect.

In closing, attention is called to the fact that many cases of recurrence of decay result from failures in the manipulation of filling materials or in the prepara-

tion of enamel walls, no matter where the cavity margins are placed. While it is impossible to discuss that phase of the subject in this paper, it is mentioned in order to emphasize the fact that recurrences due to failures in manipulation should be recognized as such. These do not begin on the surface of the enamel, unless the cavity be overfilled, leaving a ledge on which deposits may remain in contact with the enamel. In cases of failure of proper adaptation of the material to the walls, or of failure to make the filling flush with the enamel margins, or of failure to properly prepare the enamel walls, short ends of rods being left at the surface that later fall away, the recurrence begins on the wall of the cavity, not on the surface of the tooth. All these considerations may be briefly summed up as follows:

(1) Practitioners of dentistry do not seem to realize the direct relation that exists between the pathological processes involved and their treatment.

(2) We need records of operations, carefully kept by many men over a period of years, to convince the profession of the possibilities of improvement in the service given by fillings placed under various methods.

(3) Proximal decay begins in definite positions and spreads on the surface in definite directions, but within certain limits.

(4) Proximal decay often causes extensive injuries to the enamel before there is an actual cavity.

(5) The progress of decay in the dentin proceeds laterally under the enamel and directly toward the pulp, the structure of the dentin modifying the extent of the lateral decay.

(6) Decay spreads on the surface of the enamel within certain limits, but

there is no limit to the spreading in the dentin immediately under the enamel. Both processes may be going on at the same time or separately, and either may have involved the more enamel at the particular time of observation.

(7) Margins of cavities should be laid in positions where recurrence of decay cannot occur on the surface of surrounding enamel.

(8) All enamel undermined by decay in dentin should be removed, even though the margins are carried beyond the positions just mentioned.

(9) Proximal decay should be discovered and fillings should be inserted much earlier than is customary.

(10) The most essential point in the location of marginal lines is to have sufficient space between the proximating teeth at the positions of those lines to insure against recurrence of decay.

(11) Extra separation and a prominent contact will materially lessen the necessary bucco-lingual width of cavities.

(12) The most essential modification in the customary method of preparation of cavities should consist in the squaring out of the gingivo-buccal and gingivo-lingual angles.

(13) Width of surface cutting has no relation to depth of cutting in the dentin. Deep cutting of dentin should be avoided except when decay renders it necessary.

(14) It is very important to restore a properly rounded contact.

(15) Failures due to the manipulation of filling materials or to the faulty preparation of enamel walls should not be confused with recurrences due to failures in properly locating the enamel margins.

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### DISCUSSION.

Dr. R. OTTOLENGUI, New York, N. Y. I have been delighted with the three-ring circus produced by the paper, the lantern lecture, and the demonstration, but I am not sure in which ring I am expected to perform. As I was asked to discuss the paper, I shall confine myself to that. I am glad, however, that this demonstration has occurred, because it concerns tooth-surfaces which were not considered in the paper; that is, the paper was mainly devoted to molars and bicuspid, whereas here we have a central incisor—which brings me to the point I want to make.

In the first place, I wish to say of Dr. Black—and as the gamblers say, “That goes both ways”—that there is nobody who has greater admiration for Dr. Black than I have, and for the work that both the essayist and his father have done for the profession. If I take exception to anything in this paper, it must be accepted as a compliment to these gentlemen, by which I mean that if these gentlemen had no prominence I would not take exception to anything they might say; but in proportion as men have prominence, in proportion as they are great teachers, should we scrutinize what they

teach us, because on account of their prominence and on account of their scientific attainments, their word carries with it the more weight.

The principal exception which I wish to take to the paper is in regard to what may seem to you a small matter, one of nomenclature, but if anybody is responsible for the growing use of the word "proximal," it is Dr. Black's father. I am somewhat of a lover of language, and I feel almost that we have less right to take liberties with language than with politics or religion. These latter are matters of sentiment and belief, and not exact sciences, but those who contribute to make language inexact, contribute just so much to the difficulty of expression of thought. Let me say a word about "proximal." This is not a new topic, for Dr. J. W. White wrote on it some forty years ago, and what he said is as true today as it was then. As I understand that the proceedings of this society will appear in the *Dental Cosmos*, it will have been the third or fourth time that a discussion of this subject has appeared in that journal, which only proves a statement in the first part of the essayist's paper, namely, that it is difficult to carry a truth home against habit and custom. It is largely through the teachings of the schools in the West that this word proximal has such a wide usage. What does it mean? We should not use a term which no one outside of our craft can comprehend. If Dr. Black were coining a word to describe this surface of the teeth, I should take no exception, but the word existed in the language before, and meant something totally different from what it is used to express now by some dental writers. We are certainly very closely allied to the medical profession, and we should be able to comprehend

medical literature, and medical men should be able to comprehend dental literature. In medical parlance the word proximal is used in opposition to the word "distal." For instance, the surgeon speaks of the distal and proximal sides of his operation, proximal meaning nearest to the operator and distal indicating the other side. In the dental field, we figure from the middle of the mouth, and speak of the mesial and distal; the word proximal to the medical mind means opposite the distal, and to use it for what for us may mean either a mesial or a distal surface must certainly be confusing to medical men. I should like Dr. Black to give in closing the discussion some good reason for leading us to misuse this word, though the really correct word, whether it be easier to use or not, is approximal.

Let me say a word about contact points, which is an exceedingly important feature of this paper. The essayist has very beautifully shown us on the screen the advantage of the round contact point, and as he calls it in some cases, the exaggerated contact point. A very interesting point comes up in these days, when dentistry is dividing into specialties and we have a very lusty infant, orthodontia, shouting for recognition, in this close inter-relation between these so-called specialties and dentistry itself. For almost the first time we see a picture of occlusion thrown on the screen in connection with the teaching of cavity preparation. If you can recall that picture of occlusion and remember the point which the essayist so well made, namely, that the first upper bicuspid, for example, falls between the two lower bicuspids and drives the food down into the space between the two, if you remember that that is normal occlusion, and think of those inclined planes, you will realize that to



inordinately move these teeth apart and then build in an exaggerated tooth-form with the idea of saving your teeth really amounts to breaking up your occlusion, because these inclined planes after having been moved apart must necessarily operate against the occlusion of the upper teeth, and so disarrange the arch. In many cases, of course, Dr. Black's advice can be followed, because we have many sets of teeth that are in occlusion, consequently a little more contour could not make much difference, but when we are dealing with teeth in normal occlusion it would not be wise to exaggerate the contour of a tooth.

I entirely agree with the position of the essayist that oftentimes such exaggeration of the filling would be advisable, but this end can be accomplished in another way—not by moving the teeth apart, but by cutting away the tooth to be filled and then restoring it with a filling which shall have the proper contour. This in my opinion is one of the chief advantages of the cast gold inlay, and since I have been using the cast gold inlay I do not separate molars and bicuspids at all. I treat the teeth in the positions in which they are presented to me, and in that way I am sure of one thing, namely, that the tooth upon which I am operating is not moved in its socket, but is in the position which it is to occupy after the operation. This wholesale cutting away of the tooth which is to be restored is a serious factor when you use the filling process, but not when using the inlay, because it is practically no more difficult to make a large inlay than it is to make a small one. Moreover, these contact points can be made very much more exact in inlays, because the exact contact point can be over-built in the wax inlay, and in the final fitting and

setting you can polish down the gold so that it occupies exactly the position desired.

I have in the past taken issue with Dr. Black's so-called principle of extension for prevention, but I do not disagree with him so much now as I did then—partly, perhaps, because I understand him a great deal better—but still it seems to me even now that his teaching is somewhat radical. It is difficult for me to fully believe that approximal decay is quite as circumscribed as we are told it is. For example, I wish to call your attention to those pictures of decay in the enamel and dentin assuming the forms of triangles. We have been told that on the approximal surfaces the spread of the decay of the enamel will not pass around the buccal and lingual angles of the tooth; yet this has not been my experience. There are of course a good many cases where the spread does not pass around the corner, but in recent years I have been watching this closely, and I find it far from uncommon to see this caries in approximal surfaces of bicuspids and molars assuming a pyramidal form, with the base toward the gum; the angles on this base line very often reach around the angles of the tooth. And curiously enough, in spite of the fact that the tongue washes the tooth in this location, I have often found this encroachment extending around the linguogingival angle of the tooth. All have seen cases where it is difficult to place the rubber dam because it would drop into just such a cut. I know very well that in the case of an extensive cavity of that kind we might argue, and the essayist probably will argue, that this enamel has been decayed from the dentinal side and has been crushed in; but remember that at these angles there is no crushing

stress. It has been my custom to depart from the teaching of some, and to prepare my cavities, even for gold inlays, with the rubber dam in place, just as is done with the gold filling methods. I very commonly start by thoroughly cleansing the approximal surfaces of these teeth, using a fine cuttlefish disk, with the idea of thoroughly cleansing the surfaces, and by this means and by dehydrating one may detect those areas in which the rods are not yet broken down, but in which the cement substance has been lost. I have very frequently found this extension running along the margins of the gum toward and even around the buccal and lingual angles of the tooth.

The argument is made that because the inception of decay does not occur at this point it is practically immune, but this does not seem to me to be true. Inception of caries rarely occurs at these angles, but I fail to see why it should not extend to or beyond the angle. Why should it stop and not go around when it approaches that area? You are all familiar with the clinical condition that I am about to describe. I have seen a number of mouths in which there is practically no approximal decay, but in which caries along the buccal margins of molars and bicuspidis is exceedingly prevalent. In many instances, if you simply cleanse the teeth you find decalcified enamel extending as a white line all along the gum margin, and undoubtedly around the angles of the tooth, both in molars and bicuspidis. In these cases the caries does not stop, and the decalcified enamel is not limited when it reaches the angle of the tooth; I therefore fail to see why, after starting on the approximal surfaces, caries cannot extend around these corners.

You may ask, What is the practical point at issue here? The practical point is, that if these areas were really immune and caries could not begin at these points, there would be no special necessity for extending cavity margins into these areas of immunity, because we are told that the inception of caries always takes place at or near and in the gingival direction from the contact point, and that caries spreads from that point. If that were true, why should we extend the margins any farther than what we might call the infected tooth-structure?

This is largely a matter of tweedledum and tweedledee, because I believe that I cut my cavities as large as those that were shown in the pictures tonight, but I bring up the question because I am confident that a great many people who are following the Black school do not stop at what we might call the approximal limit of the margin of the tooth, but extend their margins plainly into view. This brings me to another point to which I would like to call your attention.

In the first portion of his paper the essayist speaks of the causes which control decay, and he speaks of saliva as one of the elements which brings about immunity and practically admits that it is *terra incognita*. He also says, what is no doubt true, that periods of immunity vary; that individuals who are practically immune at one time may have an onset of decay at another. But he must admit also that it is true that patients who have rapid, rampant caries in their mouths very frequently exhibit immunity later on. If that is true, it seems to me that we should not have a dogma for filling teeth—that we should not simply have a mechanical system for the preparation of cavities. In this matter we should be

more physicians than mechanics, and this brings me to my point.

I have under my care at the present time a little patient who came to me for orthodontia services, and who has been under my care and observation for five winters. She has not had a single carious tooth in that period. Her age, when treatment was started, was fourteen, so that she is now nineteen. She has undoubtedly enjoyed immunity, of course aided by her own hygienic care of the mouth; but, as is my custom, I recently had her come to my office that I might remove the retaining devices, simply to be sure that the bands, which were held in by cement, were still firmly cemented. My custom is not to allow retainers to remain in place any great length of time without removing, cleansing thoroughly, and replacing them. To my surprise I found in this case a slight roughness between the central incisors, not enough, as Dr. Black pointed out, to be considered as cavities, but I suspected an onset of caries, and on separation found that both of these teeth were involved. They are at the present time the very smallest cavities or carious places imaginable. Here, then, is the mouth of a fine-looking young woman, with a fine set of teeth, and I cannot, in spite of all the science that is back of this proposition, bring myself to the point of cutting out much of those teeth, when I know that I can fill these cavities with invisible fillings, and in spite of what I might call my affection for porcelain, I would not cut these cavities large enough to put porcelain fillings in them. Now, why? Because I know that in that particular mouth, and in that environment, the chance that there will be a recurrence of decay around the tiniest of fillings is as one in a thousand. I think

it my duty to try to save these teeth without much cutting, because no matter whether the extension be made so that the margin will show or not, you cannot fill these teeth with anything, porcelain or gold, if it is cut much, without disfiguring them to some extent by producing a shadow which will always despoil that mouth of its beauty. And so I say I believe that there is a great deal of value in these scientific data which have been brought before us, and we certainly should take advantage of them, but I do not think it proved that it is absolutely necessary to cut cavities as extensively as has been shown by many of the disciples of Dr. Black, and I doubt very much if Dr. Black himself cuts as widely as some of his disciples do. It is very much to our credit, and we owe a very great debt to Dr. Black and those who have followed his teaching, that we have arrived at the point where we must feel that cavity preparation is not a mere mechanical proposition; that something more is involved than the retention of the filling; that we must understand the etiology and the progress of caries and the liability of its recurrence in order to properly place fillings so as to minimize any recurrence, and that in reality we must become scientific tooth-fillers, and as I said before, also, if you please, tooth-physicians.

Dr. GILBERT M. GRISWOLD, Hartford. I have been wondering why I should have been selected to discuss this paper with the noted gentleman who has just spoken.

Dr. Black has said that it is not so much the question of further knowledge as the practical application of our present knowledge in the preparation of cavities in accordance with pathological conditions. I believe this is true, but the question arises, Why is it that the major-



ity of dentists do not practice in accordance with these principles which he has so clearly set forth in his paper? Possibly it is because cavity preparation is not practically taught in our colleges. Everyone who has been on an examining board has wondered whether it is taught at all. We had some forty-seven candidates last year before the Connecticut board, only seven out of this number being non-graduates, and out of the entire number not over four showed any knowledge of the subject of cavity preparation along proper lines. Their aim and object seemed to be only to shape the cavity so that it would retain the filling long enough to be examined by the board. This is a sorry fact, but a true one, and the colleges should teach more thoroughly along these practical lines. Dr. Black may be looked upon by some as an extremist. Be it as it may, what would we do without extremists in the world? He has certainly presented ideals for us to work up to, if possible. It may be questioned, however, if it is wise for all beginners to cut as extensively as it would seem that he does, for it requires experienced judgment to follow out the preparation of cavities as he suggests.

I would not criticize or take exception to anything the essayist has said, because he has told us many truths which should be uppermost in our minds. There is one thought, however, relative to small cavities in approximal surfaces, which Dr. Black claims should be cared for many months before they really are cavities. In the majority of cases this should be considered, but is there not a class of cavities in these surfaces in which, by properly trimming or changing the shape of the surface and polishing, decay can be checked for a long time, if not per-

manently, without filling and without cutting so extensively?

I have nothing further to say, as the paper was so thoroughly discussed by Dr. Ottolengui, except to thank you, gentlemen, for the opportunity afforded me of taking part in this discussion.

Dr. M. L. RHEIN, New York, N. Y. I have been exceedingly interested in the admirable manner in which Dr. Black has presented to us his thoughts on this subject. While I thoroughly indorse most of the practical applications which he has demonstrated, I take exception to a number of points which he has raised. In the first place, I have for some years taken serious exception to the opinion expressed in the West, and again by the essayist tonight, that extension for prevention is a western idea, and that we are converts to this idea, while exactly the opposite is true. I have made this statement a number of times, and have for years been waiting to establish my statements to disprove that idea. Those of the older members of this society whose memories go back as far as 1870 and the early eighties will bear out my statement that there has never been a more earnest advocate of the value of extension of cavities, such as has been portrayed this evening, than the celebrated operator, Marshall H. Webb, and the clinics that he gave all over this country bear witness to that fact. More than that, his work on operative dentistry is an attestation to that in the illustrations of his articles. Therefore as a resident of the East I take most serious exception to statements that are not in accord with the historical data on this subject. I admit that Professor Black has put into writing the arguments showing the value of prevention perhaps much more scientifically than Dr. Webb



did in his time. Had Dr. Webb lived, there would never have been a more thorough, strenuous, and powerful advocate of this doctrine than he was, and to this every student who had the pleasure of studying under him will attest. I feel that I would be recreant to my duty as a student of his if I failed to bring out this point whenever such an opportunity as this presents itself.

I wish to express my adherence to the criticism by Dr. Ottolengui concerning the misuse of the terms "proximal" and "approximal." I had occasion to take this same position a few weeks ago at the meeting of the National Dental Association held at Birmingham, Ala., and I trust that the illusion that seems to pervade the practitioners in that part of the country from which the essayist comes, regarding the misuse of this term, will not be a lasting one.

I am a strong advocate of the value of extension for prevention as illustrated by the essayist this evening, but I thoroughly disagree with the manner in which this doctrine is being constantly enunciated today. The manner in which this principle is being taught renders it undesirable and dangerous to the coming dentists, just as dangerous as the inlay fad is in the way in which it is being taught. Although it may not be the teachers' intention, the idea is conveyed to the student that dental operations are like the manufacture of shoes or clothing; that all you need is a model to pattern everything after. Anyone reading the works on cavity preparation—which has been so beautifully described and so beautifully portrayed tonight—cannot fail to be impressed with this point. I am not speaking now in reference to the practitioner of experience, but to the student body: Too little attention is

being paid to the fact that a cavity, and sometimes a disease, must be studied individually and treated individually according to the conditions that present themselves. I thoroughly agree, for instance, with the idea of the essayist that when caries has once attacked the enamel to such an extent that the sharpest point of an excavator will penetrate it, such a cavity should be immediately filled, and one should not wait for the caries to attack the dentin. But on the other hand, I thoroughly agree with the views expressed by Dr. Griswold in regard to the large class of cases in which caries presents itself in this way, and in which under certain conditions it can be stopped, and has been stopped forever, at that point. The essayist in his paper, however, makes no differentiation as to these two conditions. In a general way we may say that the essayist's ideas are more applicable to younger patients, and those of Dr. Griswold to patients more advanced in life, and this is due to the fact that conditions of immunity or inhibition of caries present themselves differently at these different periods in life. All of us who have had any extended experience have seen many cases of beginning caries in enamel that have been absolutely stopped by thorough polishing of the surface; we can therefore bear witness to the success of this treatment in a certain class of cases, and it is this particular point that I wish to stress. A paper of this kind should point out carefully the fact that there are frequent exceptions to the general rule—that is to say, the exceptions are so frequent that you cannot establish an infallible rule.

Again, while I feel thoroughly in sympathy with the general method of shaping cavities as shown by the essayist, I feel that he has not persisted sufficiently

in establishing immunity from destruction of the enamel rods in the preparation that he has outlined. It would not be satisfactory to me to follow the illustrations that he has given us here and the general manner in which he is leaving the cervical margin of the cavity. In other words, I prefer a slightly inclined bevel of the cervical margin at this point [illustrating], especially in order to protect the rods from the pressure exerted in inserting the filling, and also from the consequent enormous stress of mastication. I am not speaking now of this particular cavity, but am simply using this illustration in referring to the cavity preparation as outlined by the essayist for approximal surfaces in bicuspids and molars. In such cases a very great benefit is derived from a very slight outward bevel of the cervical margin.

Dr. BLACK. Do you mean toward the gingival border?

Dr. RHEIN. Yes, and I think we protect the rods there against destruction. In my practice not one case of recurrence of caries at this point has occurred, and I have heard so much of recurrence of caries at these points that to a certain extent I attribute my success to my taking an infinite amount of pains in the manner in which I prepare the margins at that point, realizing that it is the place where not only the greatest stress is brought to bear in inserting the filling itself, but that it is where the constant strain of mastication is manifested more distinctly than at any other point in the entire tooth.

The hour is too late for me to enter into this subject as I should like to, but I do not wish to close without again stating the fact that the principle of extension as illustrated tonight is not an unknown quantity in the East, but has

generally been practiced by the best operators in the East. I do believe, however, with Dr. Ottolengui, that a large number of men have exaggerated the principles involved here and have gone 'way beyond the essayist's ideas, and to unnecessary extremes, in carrying out these principles.

It is very novel for me to corroborate so many opinions of my friend Dr. Ottolengui, because as a rule we do not agree on these points, but I wish to bear clinical testimony to another statement that he made, and that is, that we cannot accept as anywhere accurate the statements made by the essayist as to the circumscribed area of caries. I do not believe that clinical facts will bear out his statements. The reason that I have for making such a positive contention is the same as I have for making the other contention as to the possibility of polishing out certain incipient carious spots. I believe that this statement is true in certain conditions, in certain mouths, and with certain environments; but especially in pericemental conditions such as Dr. Inglis will very likely speak of tomorrow morning, the essayist's statement is not in accordance with such clinical facts as have come under my observation. We see all kinds and variations in the manner in which caries attacks tooth structure; that is to say, the essayist's observations are not borne out by pathological conditions in the mouth.

Dr. N. A. STANLEY, New Bedford, Mass. I have traveled nearly all day so that I might be present this evening and hear Dr. Black's paper. The idea that prevailed in my mind in regard to cavity preparation by Dr. Black's method had been somewhat prejudiced from seeing work done by youthful adherents who exercised rather more enthusiasm than common sense.

The idea of extension for prevention is not new. Dr. Eugene H. Smith, dean of the Harvard Dental School, instructed us in this form of cavity preparation twenty-five years ago, when I was a student in that school. But I find that students are apt to err in not cutting sufficiently, even after they have been repeatedly shown and taught the wisdom of such preparation.

It was only experience in actual practice that corrected my timidity in hewing to the line, for failure occurred in just the places that Dr. Black has described. I can but agree with the essayist that it is wise and well to attend to approximal surfaces about as early as there is indication of decay.

While it may not be germane to the subject, suppose we begin a little earlier still, and by prophylaxis eliminate to a large degree any possibility of decay! This is perfectly feasible and practical.

I wish to thank Dr. Black and compliment him upon the skill with which he has handled the subject.

Dr. O. T. RULE, Meriden. I should like to ask the essayist why he makes the incisal point the strongest point of retention. It seems to me that this being the easiest point to get at, and there being no dislodging stress against such a filling as outlined in this cavity, there is no need for any stronger retention at that point than at any other. Also, in packing gold against the cervical margin, would you condense thoroughly each layer? or put a mat of gold there and mallet on that and finally burnish it down to form a perfect joint so that there would be no excuse for lack of adaptation in the material used there?

As regards polishing away either uncalcified or decalcified enamel: Take, say, for instance one of the labial uncalcified

streaks at the gum margin; if there were ever so slight a break in it so that a small point would go into it, would Dr. Rhein polish that out or not?

Dr. RHEIN. I tried to make it clear that if the sharpest excavator penetrates the surface, I believe it should be filled; but those I had reference to were cases in which evidence of caries has appeared, yet where it is impossible to break through the enamel.

Dr. BLACK (closing the discussion). In view of the fact that this audience has sat so patiently until this hour, I shall make my closing remarks as brief as possible.

In the first place, I wish to call your attention to the fact that the subject of this paper was cavity preparation, not prophylactic treatment, or internal medication for the correction of salivary conditions, or orthodontia. Oftentimes, however, in the discussion of a paper we obtain some splendid points from a slight digression from the actual subject, and I am not criticizing the speakers for doing that, but simply offer this as an explanation why I shall not reply to some of the statements made which did not exactly refer to the paper.

As to Dr. Ottolengui's remark about the contact point, I did not say that we should get extra separation and build out a prominent contact in all cases, but that in many cases we could build out a more prominent contact, make the proximal surface more convex, and thus materially limit the cutting in the buccal and lingual directions, and I want to maintain that statement as strongly as I possibly can. There might be cases in which the building out of a prominent contact would disarrange the occlusion. All cases are not, however, of absolutely normal occlusion by any means, and not



in all arches are all the teeth present, and while I am willing to admit that there may be cases in which the occlusion might be slightly disarranged, yet I am not willing to retract the least particle of my statement that there are many cases in which we can do what I have said without in any way disturbing the occlusion. I would take decided exception to Dr. Ottolengui's statement that he would not move the roots apart at all in making a filling. In cases of caries of the proximal surfaces, with the marginal ridges broken in, the teeth often move out of their proper position, and it is the duty of the dentist or orthodontist to put the teeth back into position in order to restore proper occlusion.

There have been many converts to extension for prevention since inlays came into general use, because inlays cannot be made without such extension in a good many cases. It is easier to insert a large inlay than a small one, and it is easier to put in a large gold filling than a small one, and so far as time and wear and tear on the patient are concerned, I should take my chances on the gold filling in all average cases. I do not wish to go into the discussion of gold fillings, but I know that for many patients I can make a gold filling with less fatigue to the patient than an inlay would cause, and in a good deal less time, and I am willing to prove this at any time. I use inlays, but not in average cases.

I should like to keep the discussion as close to the ordinary average cases as we can. We cannot lay down a rule for anything to which we could not find exceptions. Take Dr. Ottolengui's exception in the case of the young lady with the beginning of decay on the proximal surfaces of the centrals. I suspect that the carious spots were produced by the abnormal condition of the appliance.

Dr. OTTOLENGUI. No, not at all.

Dr. BLACK. Did you not have an arch on the upper teeth?

Dr. OTTOLENGUI. It was not the action of the appliance at all; it was regular normal caries at the usual contact places where there was no fixture at all.

Dr. BLACK. Did you have a wire on the labial surface?

Dr. OTTOLENGUI. Yes.

Dr. BLACK. I would not retract my statement. When you have an appliance, a wire, or an expansion arch around such teeth, you have an abnormal condition there. This patient, who was practically immune to decay, could not give these teeth actually the same care as she could under ordinary conditions.

Dr. OTTOLENGUI. I want to answer that point for this reason: I believe that there is no greater crime of which orthodontia has been accused than regulating teeth at the expense of producing caries. In this particular case, however, it would be absurd to attribute these minute carious spots to orthodontic appliances. As far as possible, in my practice, the regulation of teeth is an advantage, because it inculcates the habit of proper oral hygiene. In regard to this labial wire that you speak of, this girl was taught not only to clean her teeth as any child should do who has no appliance in the mouth, but also to polish the teeth under this wire and in the interproximal spaces, and consequently the presence of the wire has been an advantage in inculcating the habits of oral hygiene, which the child would never have acquired if the wire had not been there.

Dr. BLACK. Whenever you have such an appliance in the mouth, you are more liable to have decay. With the expansion arch you may have strain enough to move the maxillary bones apart, making a slight space between the central inci-



sors, so little that even Dr. Ottolengui may not have noticed it; a little something may have been caught between them, and in the particular case of the immune patient that is the one place where this is liable to happen.

Dr. OTTOLENGUI. In this case they were more closely in contact.

Dr. BLACK. Referring to the statements of both Dr. Ottolengui and Dr. Rhein regarding the spreading of decay across the angle of the tooth, Dr. Rhein wants figures. I can refer him to a record of an examination of ten thousand cases, in only nine of which decay had spread across the angle.\* I do not say that it does not spread across, but this is a record of an examination of the teeth of every patient who came to our school in a year, and in almost all the cases where this was found there was some abnormality that accounted for it. I do not ask you to accept this, but if you will keep a record of the mouths of your patients you will be convinced of it. You must remember that the patient has thirty-two teeth and that there are four angles to each of these teeth. When we see one in which the decay has spread across the angle, it makes an impression, and we must remember that when we see one of these cases, it is only one angle in one hundred and twenty-eight.

Dr. RHEIN. I think your percentages are wrong. It is a question of the number of patients in which this is found, and not of the number of teeth in the individual mouth. There are a great many teeth that never decay at all. I think it is the percentage of the number of patients and not the number of teeth that you should consider.

Dr. BLACK. I only ask the gentlemen to make a record, and show the percentage of cases in which caries has gone beyond the angle, and I am certain that a careful record will be a good argument in favor of my contention.

Dr. OTTOLENGUI. You know that nothing lies like statistics. You have heard the essayist state that he has examined ten thousand cases and found less than ten in which the decay has spread across the angle. Now, I wish to show how that does not at all cover the point which I wish to make. It sounds as if there were only nine cases out of ten thousand. As a matter of fact, if you are going to establish statistics of the limitation of caries, you must only count the teeth in which it goes to the angle and no farther. Do not count those that have incipient caries or those that have no caries, but pick out in his record of ten thousand cases the teeth where it goes to the angles and no farther, and your statistics will alter.

Dr. RHEIN. I have an absolute record of twenty-nine years of private practice, absolutely diagrammatic records, and I want to say to the essayist that I take extremely little stock in these statistics, for this reason: The statistics are garnered, as I understand it, by the young demonstrators in the infirmaries. Now, it is not a question, as Dr. Ottolengui says, of the caries proceeding to some prominence around the angles; these are the ones that impress themselves upon our minds, but when they start on this erratic course they are frequently stopped in time; but that was far beyond the point as outlined in your paper. I believe that I have diagrammatic records to substantiate my position. Unfortunately I cannot give you the statistics from memory, but I feel from the facts

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\* "Operative Dentistry," by G. V. Black, vol. ii, p. 142.

as I have studied them that I cannot give credence to the statement made in the paper.

Dr. BLACK. I would be willing to allow my statement to stand on a record produced by Dr. Rhein, or by any man who has a careful record of the examination of many of these cases, because I have been keeping a few records myself, and know I am not mistaken. I know that sometimes caries will go around the angle, and usually there is some particular reason for it, but those cases are very rare, and we cannot apply general rules of practice to these very rare cases. Certainly caries goes around the angles very much less often than it goes close to the angles and stops, and the reason why caries goes there and stops is just the point I call your attention to, because the cusp of the opposing tooth pushes food through the embrasure between these surfaces and scours the angles every time the patient chews.

I appreciate the fact as well as anyone that many men go too far in attempting to follow these teachings. But what are you going to do when you have a lot of men who don't go far enough, and a lot who go too far? You have to keep in the middle of the road, and try to induce some from each side to come nearer to the middle.

I have no quarrel with Dr. Rhein as to where extension for prevention started, and when in my preliminary remarks I spoke of the difference between the East and the West, I was basing my judgment on the operations that I see and the teaching of the schools, and certainly they do not teach that method in the eastern schools, Dr. Rhein, as we do in the West. I am willing to give any man credit, and no one admires Dr. Webb's work more than I do, and I have no

doubt that had he lived we probably would have today the teaching of extension for prevention in our eastern schools, and I am sorry for the people of the East that Dr. Webb died so early.

About the word approximal, I wish to cite you a little history. Dr. J. D. White, when he was editor of the *Dental Cosmos*, decided that he wanted to use the word approximal for the reasons mentioned here tonight, and he went to certain men who were publishing dictionaries and tried to get the word recognized. Their reply to him was that they did not see any use for the word, that it had not been in use, and that if he would produce any evidence of its being in the literature of the profession, they would put it in the dictionaries. So Dr. White wrote articles in which he used the word, published them in the *Cosmos*, and sent them to the dictionary authorities, and they put the word in.\* Proximal means next, and approximal means next. Just because medical men use proximal in a certain sense is no reason why we should use it in that way.

Dr. OTTOLENGUI. Proximal means nearest.

Dr. BLACK. If you are nearest, you are next.

Dr. OTTOLENGUI. Not at all. If a man borrows ten dollars from me and says he will pay me tomorrow, I am near it, but I am not next.

Dr. BLACK. My reason for preferring the word proximal to approximal is to avoid the jerk that you see both these gentlemen give to the diaphragm every time they use the word approximal.

Adjourned until Wednesday morning.

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\* See glossary, "Operative Dentistry," by Dr. G. V. Black, vol. i, p. 301.

**WEDNESDAY—Morning Session.**

THE meeting was called to order Wednesday morning April 21st, at 9.30 o'clock by the president, Dr. Beecher.

The first order of business was the reading of a paper by Dr. OTTO E.

INGLIS, Philadelphia, Pa., entitled, "The Central Thought in the Consideration of Pulp and Pericemental Diseases, with Especial View to Diagnosis." (See following page.)

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# THE CENTRAL THOUGHT IN THE CONSIDERATION OF PULP AND PERICEMENTAL DISEASES, WITH ESPECIAL VIEW TO DIAGNOSIS.

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By OTTO E. INGLIS, D.D.S., Philadelphia, Pa.

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ASIDE from fermentative changes which occur in the mouth and act as the causes of dental caries, pyorrhea alveolaris, and pulp putrefactive changes, no subject is of such importance for the proper consideration of the pathology and symptomatology of pulp and pericemental diseases as those of hyperemia and inflammation. The contemplation of inflammation properly includes that of hyperemia, for it is really a series of hyperemic changes with the added pronounced feature of immigration of leucocytes and exudation of lymph.

A correct mental picture of arterial and venous hyperemia and of inflammation, coupled with a knowledge of the causes of these conditions, enables one to view with the mind's eye all the pathological conditions which are met with in clinical dentistry. A little imagination based upon a fine differentiation of grades of vascular disturbance enables one to diagnose with reasonable accuracy, and to apply indicated therapeutics with a success which does not attend a haphazard judgment of the particular case. I am reminded in this connection of a

lecture delivered by Professor Garretson some twenty years ago upon the subject of pleurisy, in which he said that a doctor sitting in his chair listening to a patient describing correctly the typical symptoms of a case, could correctly, and without leaving his seat to examine the patient, say at once, "A case of pleurisy." Many times I have applied his dictum to cases in dental practice. A good description of symptoms by the patient, perhaps brought out by a few well-directed questions, has enabled me before looking into the mouth to say to myself, "A case of pleurisy;" "A case of hypersensitive dentin;" "A deep cavity somewhere about;" "A case of pericementitis;" "A case of pyorrhea alveolaris," etc., and I have been almost surprised at the frequency with which a glance has been sufficient to confirm the diagnosis, and in other cases only a short examination, the removal of a filling, etc., has been enough to confirm it. Do not understand me to say that a close search is not sometimes necessary, nor that doubt may not exist when many teeth are possible causes of rather obscure reflex pains, but the general proposition



of Dr. Garretson that "In the main, diseases tell all about themselves, if we have the knowledge to understand the symptoms," holds good in dental as well as other diseases.

To return, then, to our general subject, we may begin by defining arterial hyperemia as an overfulness of arterial vessels, due to a determination of blood to a given part as the result of reaction to irritation. So long as it remains such without an excessive immigration of white corpuscles it is arterial hyperemia.

In venous hyperemia the cause is essentially different, in that some obstruction to the vein prevents the return of blood to the heart rather than invites blood by irritation. A weakness of the heart or some inefficiency of the minor assistants to circulation, as the valves of the veins or thoracic movements, may cause a collection of blood in the veins, but this cause rarely acts in dental lesions. The backing up of the blood following venous obstruction produces tension upon the vessels, followed by diapedesis of red corpuscles and exudation of watery fluid—the condition of edema. In inflammation arterial hyperemia appears as the first stage, followed by a collection of leucocytes along the walls of the small veins, and the immigration of some into the perivascular tissue. As this eventually leads to stoppage of the blood current, and even to stasis, the condition is essentially a venous hyperemia. Accompanying the immigration of leucocytes is an exudation of lymph, highly coagulable in character, which distends the lymph spaces in the tissue and produces the characteristic swelling.

In the consideration of arterial hyperemia we must take into account that if it be maintained there is an increased nutrition of tissue as the result of the

excess of nutritive material in overfull vessels, and that in consequence the functions of all cells are increased. This expresses itself in constructions, such as hypertrophy, and in increased nervous activity or irritability and increased temperature due to increased oxidation. For these reasons we may expect in arterial hyperemia increased growth and greater response to tactile and thermal irritants. As the hyperemia increases these are also increased, so that a pulp or pericementum responds to irritants in accordance with the measure of increase in overfulness of the bloodvessels.

The results of venous hyperemia are opposite to these, in that, as it increases, the venous blood held in the part has its nutritive supply exhausted and the backsetting prevents an influx of new blood. The result upon the cells is a loss of nutrition, less oxidation, and hence coldness of the part, and degenerative tendency in the cells.

In inflammation both tendencies occur in the different areas. Thus in the area of stasis there is coldness and degeneration, while in the surrounding area, which is in the stage of arterial hyperemia, constructive changes may occur if the inflammation be long enough continued, while in the intermediate area resorptive activity is apt to be set up as an effort upon the part of nature to remove an irritant.

Applying these principles to pulp and pericemental diseases, we find that when we have in the pulp a mild hyperemia, such as would result from the exposure of the dentinal fibrillæ to irritants, such as friction, chemical irritants, thermal changes, etc., there is almost immediately a constructive reaction. The odontoblasts produce transparency of dentin and secondary dentin opposite the area

of injury, in an apparent attempt to close the tubules by the construction of new tubular substance (tubular calcification or consolidation), or to throw up a barrier within the pulp cavity (secondary dentin).

In slowly progressive dental caries the result is similar, for the same reason. As the pulp must atrophy to accommodate secondary dentin, it is often the case that another form of constructive change occurs, namely, pulp nodules, and if the atrophy and degeneration continue there is apt to occur either death from vascular disturbance or further depositions of calcific material, without regular secretory activity, such as calcific degeneration. Strictly speaking, the degeneration probably precedes the calcific deposition, which should occur in the diseased area.

If more severe irritants act, such as thermal shocks through deep cavities, abrasions, erosions, fractures, ground teeth covered with metal, deep cavities filled with metal, septic dentin under a filling, or such as a blow or constant impact, as in the various forms of malocclusion, or when reflexes occur from other points of irritation, or when an area of inflammation existing in a nearby area extends in the direction of the apical tissue of the tooth in question, the pulp becomes overfull of arterial blood, and reacts to thermal irritants in proportion to the overfulness. It also produces in the odontoblasts a degree of hypersensitivity conforming to its own increased irritability.

A simple example will illustrate the nature of these responses to vascular overfulness. I one day caught my lower incisor outside of the upper, and the return of the jaw to its place produced sufficient force to strain the lower incisor a little. For a day nothing was noticed;

later the lower tooth began to be slightly sore to the touch and at the same time began to respond to cold water taken into the mouth. The next day it responded still more, so that it became necessary to shield it from cold substances. The next day the symptoms had subsided somewhat, and in a day or two more it was in a practically normal condition.

Perhaps an analysis of the pathology and symptomatology will be of value. First, pericemental injury followed by pericemental hyperemia; by simple contiguity an overflow of blood into the pulp followed, which produced increased irritability of its sensory nerves, hence the increased response to cold. In the recovery the pericemental hyperemia subsided, draining the pulp of the excess of blood, the pulp hyper-irritability subsided, and the response to cold lessened, until the normal non-conductivity of the enamel and dentin was sufficient to protect it against thermal shock. In this case it is probable that general dentinal sensitivity was also increased, rendering possible a painful fibrillar reaction by conduction of cold through the enamel.

If we analyze a common case of hyperemia through a filling or open cavity, we find a similar pathology working in the other direction. Thus from one shock some hyperemia of the pulp bulb results, mild in character. More shocks, more hyperemia, and as this goes on the thermal tolerance is lessened until the pulp is shocked by the slightest variation in temperature from the normal, even a breath of air being sufficient to start a paroxysm of pain. If the case be one which affects the entire pulp a pericemental hyperemia is liable to be produced, which renders the tooth tender to touch. This is especially noticeable in profound

pulpitis, with which there is always associated some hyperemia. The overfulness of the pulp vessels causes an overflow into the pericementum, which thus becomes hyperemic.

The anatomical situation of the pulp, boxed up in unyielding dentin, compels the artery and vein to lie side by side at the single apical foramen. As the enlargement of the artery necessarily compresses the vein, it follows that a venous obstruction is set up. The blood is held back in the venous system of the pulp, while an increased influx enters by the arterial vessel. The result is necessarily increasing vascularity of the pulp by venous hyperemia. For this reason profound arterial hyperemia usually ends in venous hyperemia, and not infrequently the diapedesis of red corpuscles and the solution of their hemoglobin causes the pulp and the dentinal fibrillæ to be stained pink. Even with a congestion of this degree the pulp may live for some time, even months, even though the bulb may be dead, which, to my mind, argues for a collateral circulation in the pulp tissue, which some prominent observers claim does not exist.

Looking at this pathology from a clinical point of view, we would expect to find, first, an increasing response to cold as the arterial hyperemia increases, and a decreasing response as the bulb undergoes stasis and degeneration, while in the intermediate stage the extreme paralysis and distention of the bloodvessels may lead to continuous boring pain, and when the pulp is opened, to profuse bleeding which may not readily subside.

The therapy of these hyperemias, of course, depends upon the nature of the cause. If due to conduction of thermal changes, these must be corrected by non-

conductors or by the shielding of the tooth.

If the hyperemia be not too severe, as after gold filling in cavities of moderate depth, the pathology may be considered as either produced primarily by conduction or it may be argued that the injury of the fibrils has produced a pulp reaction favoring a response to cold. In either case counter-irritation and shielding often have their reward in a subsidence of symptoms after a few weeks.

In carious cavities, sedation and the use of non-conductors are usually effective, except in cases of exposure of the pulp, which is then better devitalized, as a rule. In this same devitalization, if arsenic be used, we have to consider the death of the pulp through the production of a rapid venous hyperemia superinduced by the devitalizing action of the arsenic. In the death of the apical portion of the pulp the pericementum often becomes hyperemic. This view, which is clinically proved by experience, removes the fear of apical arsenical necrosis in well-developed teeth. In cases of external injury or extension of an area of inflammation into apical tissue, the cause should be removed and the general principle of rest, counter-irritation, and possibly general derivation employed, without any resort to interference with the pulp undergoing reaction.

In profound venous hyperemia of the pulp, sedation often fails, and only depletion by pricking the pulp, or in some cases burring out the bulb under nitrous oxid anesthesia, will give relief from the pain. The pulp must be destroyed.

In acute inflammation of the pulp we have many of the symptoms of hyperemia, because the inflammation is a hyperemic condition, plus the characteristic



immigration of leucocytes and exudation of lymph. The pain is heavy, continuous, and boring, or may be lancinating or jumping. In the later stages recumbency allows the blood to flow into the paretic vessels, which may excite to pain a previously quiet pulp. Pain in response to tapping is due either to concussion of the inflamed pulp or to associated hyperemia of the apical pericementum. When exposure exists, suction, pricking with a pin, etc., the pressure of food in mastication, chemical irritants such as salt, sugar, acids, and the products of fermentation or bacteria, may individually produce pain.

If pyogenic organisms have reached the pulp and infected it, pus probably forms, either upon the surface of the pulp or in its substance. If the pus is confined, pain in response to heat and relief from the application of cold are the chief symptoms, though passage from one temperature to another or touching with the tongue will often excite pain. Sometimes the venous hyperemia proper, or that associated with inflammation, will have caused death of the pulp bulb, and this becoming infected and putrefied, the gases formed cause a peculiar delayed reaction to heat, though in quite a number of cases the predominant symptom has been a tenderness to touch, as though an abscess were forming—that is to say, pericementitis is present. I have quite often found in the canals of teeth root-fillings overlying living pulp remnants which were supposed to have been removed years before. In one case as many as twelve years had elapsed between the time of root-filling and the serious irritability of the pulp. In such cases are found combined, pain in response to heat, or even to cold, and pericemental tenderness.

There is often present, occurring at

intervals, a sudden stab of pain, as though a wire had suddenly been run into the pulp, which pain may cease immediately. In other cases reflexes to some other part occur, simulating so-called trifacial neuralgia.

A considerable portion of the pulp may be alive, so the inference is that any pericemental reaction is due to extension of inflammation from the pulp, though the possibility of apical infection from the infected pulp cannot be wholly ignored, especially as in some cases distinct gingival or even facial swelling occurs. Upon opening and removal of the dead portion of the pulp and the use of an antiseptic dressing, there is seldom any further sign of abscess.

The total death of the pulp from venous hyperemia or inflammation is gangrene, which may, however, be partial in many cases. Here we have two varieties: First, the dry form, in which the pulp, under aseptic conditions, shrivels to a thin thread, a condition very rarely to be found; second, and very common, moist gangrene, in which the moist dead pulp admits bacteria which cause it to putrefy. The chief consideration in the pathology of this is its action as a chief cause of apical abscess, or sometimes non-purulent pericementitis of chronic nature.

Often leakage of gas through dentinal tubules forms a sufficient vent to prevent abscess formation. Thus the patient complains of a bad taste in the region of the tooth—which, however, may be due to decomposing material in an ordinary cavity or to stagnant food collected between the teeth or about the margin of a rough filling.

Sometimes pain in response to heat or the passage from a warm to a cold atmosphere, and *vice versa*, is sufficient



to start apical irritation. This symptom is, however, more often associated with abscess of the pulp.

As one would expect, the tooth is discolored by iron sulfid as a rule, the dentin is insensitive to cutting, the chips have a foul odor, and the passage of an interrupted electric current produces no shock. These symptoms, or lack of them, together with opacity to transmitted light in more doubtful cases, are plain evidence, yet in previously treated teeth some imagination and courage and careful procedure are required to remove an apparently good root-canal filling from a tooth which has a portion of dead pulp in an imperfectly filled root-canal, and which is causing chronic apical inflammation without actual apical abscess. Here again, however, an odor is usually perceivable, and careful removal of the root-filling usually unearths the expected gangrenous pulp remnants within the apparently empty apical portion of the root-canal, into which a very fine Swiss broach will usually pass as soon as the canal obstruction is removed.

That the apical abscess is an inflammation is a matter of course, but the phenomena of sequential desire to handle the tooth, tenderness, soreness, and exquisite soreness are all significant of the degree of irritation of the pericementum, while the slight extrusion and finally elongation and painful malocclusion are symptomatic of the amount of exudation present. The character of the swelling upon the gum and the facial involvement are also full of meaning as to the advancement of the suppurative process in its passage through the bone and gum.

A definite condition of apical abscess is not usually difficult to diagnose, if one remembers that such a state is due to moist pulp gangrene in all cases not re-

cently subjected to infection by instrumentation, and the clinical picture becomes clearly defined mentally if we recall the pathological phenomena of infective inflammation. Located in apical tissue, the swelling of the same causes extrusion of the tooth and looseness, while the inflammation present causes the tenderness to touch. Here, though, we have refinements of the pathology in a series of phenomena varying from simple desire to work the tooth with the fingers to facial swelling and looseness—the degree of involvement, of course, being dependent upon the extent of the suppurative inflammation, the resistance of the tissues, and the capacity of the individual for endurance. In diagnosis the symptomatology of moist gangrene is always to be considered.

Other refinements may be carefully thought out, namely, why pus appears first, then blood, upon venting a tooth; why pus sometimes does not appear; which root is affected; whether a pyorrhea pocket or a dead pulp is the cause of an abscess apparently apical; why a fistula cannot be washed through from the root-canal, and many other complications which may arise in treatment.

Many times I have seen in dental literature a reference to dry gangrene of the pulp, with a description of a foul canal appended. Dry gangrene is of very rare occurrence, at least as applied to the whole pulp. The pulp is probably so affected in many cases of root mummification, but I believe that a true dry gangrene rarely causes trouble. It is rather putrefaction, which involves liquefaction and gas formation as its end-product, to which we must attribute the apparently dry but foul canal sometimes observed clinically. Of course, the pulp being dead, the dentinal insensitivity

and opacity are present in dry gangrene, as will also be a shrunken and fibrous pulp remnant. In such a case subsequent infection may cause apical abscess.

In non-septic pericementitis we have the same general considerations of hyperemia and inflammation without the formation of pus. The tooth may be as tender, or more so, than in the septic form, but a history of the tooth, its subjection to external violence, or internal, mechanical, or chemical injury to apical tissue, leads one to careful differentiation from infective inflammation.

In this connection I would point out the relation of a non-septic pericementitis to a septic one. Just as a case of arterial hyperemia of the pulp due to pyorrhea located in the pericementum, or an abscess upon an adjoining tooth, can only occur through previous irritation of the apical pericementum—or possibly a reflex—so this pericemental reaction must be looked upon as an extension of inflammatory action from a septic site, yet in itself to be aseptic, for in most cases the septic area is circumscribed. It may extend and involve the previously aseptic area, but still there will remain an aseptic area which may involve another pericementum, or a more remote portion of the same pericementum. It is for this reason that we may have in the same pericementum a pyorrhea, which is a suppurative or infective inflammation of the pericementum primarily, associated with

degrees of vascular disturbance which produce on the one hand construction, as in hypercementosis, and on the other destruction, as in resorptions of cementum.

In like manner may we consider gingivitis, both marginal and interstitial, as being either septic or non-septic in nature, and whichever it is we may look farther for a non-septic area, and often, as previously stated, for reactions, such as pulp hyperemia, which may seem of distinct nature but are really simply extensions of hyperemic areas into a peculiar anatomical situation.

The neuroses associated with these hyperemic and inflammatory states are simply nervous reflexes, often difficult of exact etiological determination, but frequently by the aid of careful differentiation and explanation, or by the aid of the Roentgen ray, are referable to definite pulp or pericemental reactions.

While this paper has necessarily not dealt with many factors underlying dental pathology, and especially not with constitutional factors, which may be in the main regarded as predisposing rather than exciting, I believe that the essential views which must ever be kept in mind in diagnosis, particularly in obscure cases requiring differentiation, have been presented, and if they prove to be of as great comfort and utility to my hearers as they are to me daily, I shall be repaid for my trouble.

*DISCUSSION.*

Dr. M. L. RHEIN, New York, N. Y. The subject under discussion is a very complex one. I have very carefully perused the essayist's paper and the more I have thought of the matter the more difficult it is for me to decide exactly on what lines to discuss it. It would be very easy to speak on different phases of this subject, but to confine oneself to an intelligent presentation of the subject-matter is a little difficult in my mind. There is no question as to the importance attributed to the differential diagnosis of any form of pathogenic condition that we may meet with in that region. If dentists as a class are defective in this one respect, it is due to the fact that our methods of dental education have never seemed to be such as to impart the knowledge of how to make a differential diagnosis. Dentistry has been too often but too properly accused of being entirely too empirical in its action, in its treatment, and this accusation is based entirely upon this primary professional fault, which is undoubtedly a fault in training. After a young man has been taught along certain lines for a certain number of years, it is very difficult for him to change his methods of procedure. The very essence of treatment is to find out first what is wrong, which is the principle involved in diagnosis. I venture to say that there are very few men within the reach of my voice who, after they once know positively what is the matter in any case in the mouth, would be at a loss as to the proper procedure. It is not the lack of knowledge or ability to do things

which limits the average professional man; it is the lack of knowledge that will enable him to know what is wrong, and consequently the paper of the essayist is a very valuable one, because there is no gainsaying the fact that the principles of dental education as taught in every exclusively dental college are extremely faulty in that respect. They are faulty because there is no dental curriculum so designed as to render it possible to teach the principles of proper differential diagnosis. I have no doubt that the essayist will be eager to refute this assertion as far as his own institution is concerned, and that Professor Black may be inclined to do the same thing, but I am speaking advisedly on this point, and I say it for this reason: We cannot separate a part of the body from the whole, and until dental education starts with a general and accurate knowledge of the entire body, the same knowledge that is part of the thorough education which a complete medical course gives, this accusation will be bound to stare the dental teacher in the face, and there is no possibility of overcoming it by any simple form of education which excludes everything that is known of the subject of scientific medicine.

This may be unpleasant pabulum for a body of dentists to digest. Men who come as guests before societies, dental or other, generally like to say pleasant things, but those of you who know me well will appreciate the fact that my intrinsic love for truth and candor prevents me from discussing a question so important as this without giving you

the essence of my thoughts on this subject. It is not a pleasing task to present this matter in this light, but I defy any of you to consider this matter carefully and refute my statements.

In the lectures on oral pathology which I have given for a number of years, I devote all the time and ability at my command to impress upon my class this fact, and I say it to them in somewhat these words: "You are leaving this institution in a few months with the privileges and rights to practice dentistry. Your education is partial. If you are told what the trouble is in a case, you will know what to do, but nothing will place you in a more unfortunate position in the treatment of diseases of the pericemental tissues and the gums and of any conditions involved in the subject under consideration this morning than your inability to make a proper diagnosis. Now, the advice that I give to you as young men is that as soon as you leave this institution, proceed to follow up your studies; whether you do so in a medical institution or not is not of primary importance; the M.D. degree is not the thing that is going to give you knowledge, but each and every one of you can follow this line of study without necessarily spending his time in an institution or taking a degree. But if you wish to be successful in knowing what is the matter with your patients, you must acquire as much knowledge of scientific medicine as it is possible for you to obtain." I try to make this as impressive as I can to my class, because I feel that every dental student when he passes out into practice, though he may have good technical ability, when he is confronted with questions such as these is seriously hampered.

I must say that there are a number of

things that the essayist has presented on this subject that are somewhat mystifying to me from the point of diagnosis. His detail of symptomatology I can follow very closely, and to a great extent agree with. The man who is entirely fitted to practice dentistry is in a peculiar condition in regard to diagnosis. He is much in the same position as the man who is furnished with an outline from which to paint a beautiful picture. In other words, the man who has found his proper place of work in the world, after a certain amount of experience learns to make a correct diagnosis intuitively. This was the case with the great physician of centuries ago. He had no knowledge of scientific medicine as we have today, but he was intuitively a diagnostician, and this is a faculty that a great many successful dentists acquire from experience; but to be able to make a differential diagnosis in the way that the essayist appears to outline, if I understand him correctly, is beyond my power, and I do not feel that in this day of science we have any right to trust to what I may term a snap diagnosis, whether it is correct or not. I refer to one of the opening paragraphs of the essayist's paper where he says: "A little imagination based upon a fine differentiation of grades of vascular disturbance enables one to diagnose with reasonable accuracy, and to apply indicated therapeutics with a success which does not attend a haphazard judgment of the particular case." I am particularly well aware that time and again I am enabled to make a correct diagnosis of certain diseases immediately upon looking at a case, and upon a careful scrutiny of this particular case, but I decry anything in the way of instruction of this kind. The essayist's contention above is wrong and



unscientific, because I have sometimes found myself in error, that is to say, I have found that I have had to reverse my original judgment in certain conditions. I will admit that it is impossible for the diagnostician to refrain from making a mental diagnosis, but he should beware of giving expression to that diagnosis before he has corroborated it.

The subject of this paper as presented by the essayist involves in my opinion one of the most scientific and important factors of our professional life. Unfortunately, it is one that we have so little truly scientific knowledge of, that it is to my mind impossible to begin to make the proper differential diagnosis that the essayist speaks of. I have been working for years in the field of the varying forms of pathogenic conditions which the pulp and the contents of the root-canals present, and I find myself met with the fact that if I could give up my active work as a dentist and devote my time exclusively to laboratory investigation of the conditions of pulp-disease, at the expiration of my normal life I might have succeeded in accomplishing a little bit in this direction. In my opinion we have just begun to knock at the door of understanding the different forms of pulp-disease. It may then be more or less true, as it has been in the past, that in many of the general diseases we would not be able to do much more for our patients, even if we knew more. We cannot say, but I believe that we might be able to do a great deal more in the line of preventive treatment if we understood the different forms of disease that are presented in these tissues. In order to understand the variations of pulp diseases, the dentist would have to start to examine the pulp-

chamber contents and the canals of the teeth that are in an unhealthy condition long before the pulp has died, and the difference in the pictures that he will find under the microscope is so great that it is astounding to the scientific observer, though not strange if one stops to consider the character of the tissue involved. There is no reason to be surprised that we are able to find in the pulp tissue every form of pathogenic degeneration that is found in every other tissue of the human body. It is not unreasonable to suppose that if we find a certain form of pathogenic condition in one pulp and a different form in another, the reason, the etiology, must be different. Prophylactic dentistry, of which we hear so much at the present time and of which so little is really understood, if we delve into the true depths of its meaning, consists of a great deal more than oral hygiene. Oral hygiene only skims the surface of what will be known in the future as prophylaxis, because the real essence of prophylaxis consists in the ability to prevent, to interfere with the etiologic factors that bring about certain forms of dental lesions that are most difficult to contend with, notwithstanding all the hygienic care that can possibly be taken by the patient.

I have tried to concentrate myself as far as possible upon the main point in the essayist's paper, and I desire to impress upon this body of practitioners that the man who wishes to perfect his ability for effective and successful treatment of his patients must seek the road to success by gaining all the knowledge possible that will enable him to diagnose his cases, not intuitively but scientifically.

I agree in the main with the statement of symptoms mentioned by the

essayist, but I feel that I cannot examine the mouth of a patient and make a differential diagnosis in such an easy way as the essayist seems to.

The essayist, leaving the subject of diagnosis, entered the domain of treatment in a partial way in his mention of a number of cases, and there is one little feature in his paper that I wish to emphasize, namely, the conditions of imperfect root-fillings that he has removed, and in which he found portions of living pulp tissue. I have heard this statement contradicted so often that I wish to emphasize the fact that such conditions exist, and very frequently exist, and in my opinion are a profound cause for inflammatory conditions that may explain neuralgic conditions of a grievous form. The essayist also said, if I recall correctly, that the use of arsenic is safe if the apical end of the canal is in a normal condition, and he described very beautifully the action of arsenous acid. To my mind the time has come in the practice of dentistry when the use of arsenous acid should be considered an absolutely erroneous practice, to use a very mild expression. I am not at all in sympathy with the frequently propounded doctrine that in certain forms of hyperemia we can depend upon the effects of cocain for anesthesia. I fail to find the percentage of conditions such as is frequently outlined by different writers on this subject. But even if we were debarred from the use of that valuable agent in pulp-removal, I should still most strenuously oppose the use of arsenous acid as an aid in pulp-removal, for two reasons. In the first place, after being obtunded, the pulp of a tooth should be removed alive, and before there is any possibility of infection reaching it. I should like to dwell at greater

length on this point, but the time at my disposal is too short to explain my reasons for this position. It is unnecessary for me, in addressing men some of whom have been in practice for such a long time, to dwell upon the untoward results of arsenous necrosis around the alveolar sockets, and the effects of pericemental irritation, though there need not necessarily set in subsequent necrosis of the tissue itself. It is for these two reasons that I think it is time that the arsenous treatment of pulps should be relegated to the realms of antiquity, and should have no place in the modern treatment of dental lesions.

The essayist devoted considerable time to the diagnosis of teeth with dead pulps, and I wish to dwell a little on this point. The number of such teeth is very great, far greater than the young practitioner ever dreams, and while the essayist incidentally spoke of the use of the Roentgen ray in a couple of cases, he omitted to mention the fact that no other diagnostic agent that has been introduced in my life-time begins to compare with this agent for substantiating the diagnosis both of this condition and others. The essayist also left out of consideration the value of intense cold in this respect. I do not mean a temperature of 0°F., but the immediate application of a temperature of at least 20 or 30 or even 70 degrees below zero to a tooth. The Roentgen ray and the subjection of the tooth to a degree of intense cold far below zero are the two surest means of making this most valuable diagnosis.

In nearly all of the conditions that the essayist spoke of, the same thing in regard to the X ray is true, and it is surprising to me that he should have paid so little attention to the value of this agent. Only yesterday, the very last

case that I examined in my office was one of which I had just taken an X-ray picture and in which I made a differential diagnosis of pulp-stone. I saw this case originally three or four days ago, and on Saturday I took two X-ray pictures, which surprised me so much by the clear and distinctive outline I received of this condition that I decided to take another X ray in order to see if possibly there was something wrong with my film. This was the case of a patient who had been suffering from trifacial neuralgia for the past six months and had gone the rounds of a number of dentists. She has had two teeth extracted, without gaining relief, and I have never had more substantial satisfaction from the use of the X ray than I happened to have yesterday in this case. I wish to remark that this was an unusually satisfactory result of the radiograph, one of the most unusual that has fallen to my lot. A radiograph, of course, cannot be read as satisfactorily as a photograph. This the dentist has to learn, and he will require a little instruction in order to understand what he is looking at, but when once he understands skiagraphs, it is an easy thing for him to know if there is a chronic abscess at the end of the root, if it circumscribes only a part of the root, or the side of the root; in fact, with the proper angle of adjustment of the film you are able to determine almost any deposits that may be on the outer periphery of the roots of the teeth, and this is very often a very important point in differential diagnosis in treating obstinate cases of pyorrhea in which the local treatment has not been entirely satisfactory.

I feel that I am altogether too lengthy in the discussion which I have given to

this paper, and my only apology is that I am so earnestly in sympathy with the subject that if I have distressed my audience unnecessarily, I trust you will forgive me.

Dr. INGLIS (answering Dr. Rhein \*). I thank you for the courtesy of allowing me to break into this discussion and answer Dr. Rhein. I think he has rather misunderstood the purpose of my paper. My intention was not so much to give all the possible means of diagnosis as to point out the fact that just the very thing that Dr. Rhein mentioned in the early part of his discussion, together with a little imagination based upon fine differentiation of pathological conditions, would be a great help to the average practitioner in making a diagnosis, perhaps without the aid of the X ray. Not everyone has an X-ray apparatus in his office, and even if he does, he does not always wish to indulge in a skiagraph for the purpose of diagnosis. There are times when one wishes to make a diagnosis immediately. I do not wish to pose as being able to easily make a diagnosis in obscure cases, as I have distinctly stated that there are times when obscure cases may require a lengthy consideration or even a skiagraph in order to be correctly diagnosed; still, after a little thought applied to the condition presented, together with a little imagination—and I mean by that not simply imagination without basis, but the ability to see with the mind's eye the conditions that one cannot see with the physical eye—will lead to a correct diagnosis.

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\* Owing to the necessity of keeping an engagement to read a paper before the Southern Dental Society of New Jersey in the evening, Dr. Inglis was compelled to leave at this time, before the discussion was finished.

Unquestionably one has occasionally to reverse one's judgment, and this judgment should not be expressed to the patient before a careful confirmation has been reached. But it does not always require a skiagraph to say that a person has pyorrhea, or an exposed pulp, or some other condition which may present. In fact, in three-fourths of the cases presented the skiagraph is absolutely unnecessary in ordinary practice.

Speaking of having put this forward as a final study of the subject, I would say that I am by no means satisfied with the present relationship between symptomatology and pathology. In many cases we do not know the relations between the actual clinical symptoms and their microscopical expression, and when we do know we shall be better able to make a diagnosis; still, until that time comes, there will necessarily be some place for imagination, because we cannot always take out a pulp to find out what is the matter with it.

I recall a case in particular, in which an upper right bicuspid had been filled with gold for many years. The patient suddenly experienced sensitiveness to cold in that tooth, and I was at first inclined to think that some pathological condition had developed in the pulp, but on a little further inquiry I found that the patient had consulted a dentist a short time previously and had his upper right third molar treated. On examination of this molar I found a large filling in the buccal surface. I assumed that it would be difficult to treat the roots of that tooth properly from the buccal surface, and concluded that it contained a pulp which was at least partially living. I did not consider it necessary to take a skiagraph, but I took out the filling, opened the tooth, and found

the pulp semi-gangrenous. The coronal portion was insensitive, but the apical portion was highly inflamed, and after its removal the symptoms in the bicuspid disappeared. A little imagination in that case led me to believe that there was reflex hyperemia of the pulp in the bicuspid, superinduced by the irritated pulp in the third molar.

In another case a gentleman had an upper left canine which gave no apparent pain on application of heat or cold, but pain was felt in the upper left first molar. This molar was perfectly sound, and I found that it was the irritation of the pulp in the canine that caused the reflex pain in the molar. Arsenic was not advocated, as Dr. Rhein seems to think. I only mentioned its mode of action. It has, however, in my opinion, some legitimate use at times.

We should certainly have a far greater knowledge of not only dental pathology, but general pathology, in order to make our diagnosis properly, and especially in those cases in which systemic conditions may underlie the local conditions.

Dr. A. D. BLACK, Chicago, Ill. I had not intended to say anything on this paper, and I do not like to shoot at a man when he is going the other way, and particularly when he is not coming back.

There are one or two things that have been said that I should like to speak on briefly. First, I might make a little criticism of Dr. Inglis' paper. I do not know whether it appealed to the others as it did to me, but I believe that we should have profited more from the paper if it had been more limited. He has presented three different conditions, each of which to my mind would have made a better subject for his paper, viz, conditions of the pulp, conditions



of the tissues at the apex of the root resulting from pulp conditions, and conditions of the membrane attached to the teeth at the gingival side. I am of the opinion that there would have been less confusion of the conditions presented if he had confined himself to one of these three things. The pathological and physiological processes presented have been interesting, but again I should have preferred a presentation of these conditions in more direct relation to the conditions as we observe them in practice. I mean by that, if these conditions could have been separated into groups, so that the condition itself would have indicated to us the treatment that we should employ to relieve it. Possibly I am a little more confused than the rest of the audience, but that is the way in which the paper appealed to me.

When the tissues about the end of the root are involved, there are, to my mind, three distinct conditions that may present. First, the condition of inflammation about the end of the root in the pericemental tissues as the result of the pulp condition, but without suppuration, there being no evidence of any suppurative process outside of the pulp. Second, a condition in which pus is present, either forming or already formed in the tissues beyond the end of the root; and third, a modification of that condition, in which we have a chronic abscess already established. We ought to be able to differentiate these conditions in a large number of cases by the symptoms which Dr. Inglis has indicated, but yet the essayist did not separate these symptoms into groups, as might have been done in order to impart the best ideas of the conditions as they are presented in practice.

One condition I wish to discuss from

the standpoint of diagnosis, namely, the chronic abscess. I do not often need an X ray for making a diagnosis of the conditions that are present in a chronic or even an acute abscess. I do not wish to depreciate at all anyone's opinion of the value of the X ray in the diagnosis of these cases, but I believe that a good many men use the X ray more than they ought, and some men have been confused by the X ray and have done things which they should not have done, because they have not read it properly. It is not everyone who can take a good skiagraph, and knows how to interpret it. The X ray should be handled by experts, in the same way as men conduct pathological laboratories. That is their business, and they should know more about it than we do, although we should, of course, be as familiar with these things as possible.

To my mind the greatest error the dental profession makes in cases of chronic abscess is that we do not find out how much tissue has been detached from the end or the sides of the root. That is the most important phase which we should know in each case. If we have a knowledge of the conditions existing there and are certain that not very much of the tissue normally attached to the end of the root has been destroyed, then there is hope of success in the treatment of the case, but if we have a case in which the tissues surrounding the end of the root are involved, and a good deal of the peridental membrane has been destroyed, then are we going to be unsuccessful in the treatment of the case in proportion to the amount of tissue destroyed. First we should find out how much of this tissue has been destroyed; I usually rely on two probes for that purpose. First, a

small blunt-end soft silver probe is passed through the sinus to locate its other end. Sometimes the use of that probe is not necessary, as the opening of the sinus will generally but not always be over the end of the root involved. I recall the case of a gentleman who presented evidently a chronic abscess on the lower canine. All the teeth back of that had been extracted, to the best of his knowledge. That sinus led back to an impacted third molar, although the opening was in exactly the position in which we would have expected to find it if the abscess had been from the canine. I would, then, use this silver probe to locate the other end of the sinus. After that I would take a stiff sharp steel probe and pass it into the sinus to get into contact with the root involved, and with this instrument I should expect to discover in more than ninety-five per cent. of cases practically the exact condition of the tissues attached to that root; that is, in most cases in which this probe has been passed through and has come into contact with the end of the root, by passing it up and down and around the root we can locate without serious difficulty the amount of the root that is denuded of its covering, and just in proportion as the tissue is denuded should I expect to have success in treatment. We know that many of these cases are treated by medication through the root-canals, but in such treatment no amount of skill on the part of the operator will enable him to discover the conditions on the outside of the root. I have seen many of these cases in which no examination of the outside was made at all; in fact, I think a great many practitioners do not make this examination. I simply wish to call your attention to that one point in which

we fail to make a diagnosis of these cases, and particularly recommend to you the sharp stiff steel probe for this purpose, because it will tell so much more than a blunt or soft instrument, such as the silver probe. By passing this stiff steel probe into the sinus you can differentiate between the root and normal bone, or between the various conditions of bone or the enamel of an impacted tooth. There is no single instrument that is of so much value to me in conditions of this kind. I learned of this instrument from Dr. Thos. L. Gilmer.

I also wish to say something in regard to Dr. Rhein's statement as to the failure of dental schools to properly present the subject of pathology. I always wish to be on the side of the optimist, rather than on the side of the pessimist, in looking at the conditions of dental education in this country. I think we are traveling at a pretty rapid rate and making good progress; the dental schools as a whole are forcing pathology, general pathology, general anatomy, and all subjects of that kind on our students as fast as they can make the students absorb them, and all know very well that one of the greatest difficulties in our schools is to interest our students in these subjects. They get the idea that they want to get busy making crowns and bridges and filling teeth almost the first thing, and the hardest thing that most schools have to do is to interest students in these subjects. I am sure that you will find that most schools are advancing their teachings in these lines as rapidly as they feel justified in doing without driving their students away. In that connection I should like to suggest that the dental profession as a whole can do much in

support of the schools in this work, if in private conversation with men who are going to school they enforce upon their minds the value of these subjects.

The next order of business as announced by the president was a paper by Dr. J. E. POWER, Providence, R. I., entitled, "Some Cases of Stomatologic Interest," as follows:

## SOME CASES OF STOMATOLOGIC INTEREST.

By JAMES E. POWER, D.M.D., Providence, R. I.

IF one wishes to interest a body of stomatologists, he must describe in detail the pathology of each particular case. Not only this, but the lecturer should also give expression to his interpretation of the pathologic manifestations, thereby explaining, to a degree at least, his reasons for the definite line of treatment which he has followed in a given case.

By following these lines an intelligent discussion may be stimulated which will add to our store of scientific knowledge in such a manner that we may become worthy of the name diagnostician. When we reflect upon the fact that neither medicine nor dentistry is an exact science, we may well marvel at the wonderful results which are accomplished in these professions in the treatment of disease.

Diagnosis means guessing, but it also means—or at any rate it should mean—scientific guessing; guessing based upon a proper knowledge of the sometimes invisible processes which take place in the production of disease. Διὰ, meaning "through," γινώσκω, meaning "I know," is the way the Greek had of saying that the treatment of disease is based upon

inductive philosophy, and that if we wish to become worthy diagnosticians we must understand the processes which are associated with all pathologic conditions. Many processes of disease are intimately connected with one condition, inflammation, and since the cases which I have selected to present to your honorable body have an organic relation with each of the many factors which produce this condition, it will perhaps be of interest to say just a word upon the successive changes which begin with stimulation and end with suppuration. I shall not enter upon a detailed description of the experiments of Grawitz, Metchnikoff, Thoma, Sutton, Adami, and others, whose labors have not only made our understanding of this subject more complete, but have also rendered the study of inflammation and of the activity of the polymorpho-nuclear leucocyte—which is really part of this process—one of the most romantic pages in the volume of modern medicine.

The cardinal symptoms of inflammation are *calor, dolor, rubor, tumor*, with impairment or loss of function. Heat, pain, redness, and swelling—these condi-

tions are usually associated with disease, and unless we are familiar with them, as well as with the conditions which produce them, we are unable to follow that great law which says, "To treat intelligently or to cure disease, first remove the cause." By this is meant not only the original cause of the pathologic condition, but also the causative factors which produce the heat, redness, swelling, and pain.

Whether the exciting cause is traumatic, thermal, parasitic, bacterial, or any of the other causes which produce disease, we shall always find present these four signs of inflammation.

For illustrative purposes we shall compare the bloodvessels to flexible rubber tubes. Under normal conditions the system provides for the passage of a certain quantity of blood through these vessels or tubes. If anything, whether of a chemical or physical nature, be introduced into any part of the body, and the natural harmony of the part be interfered with or destroyed, stimulation will start the processes which are known as the inflammatory processes.

I shall try to describe briefly those changes with which all forms of disease are associated—first, in the presence of a foreign element in the tissues, generally bacteria. This is followed by a constriction of the bloodvessels. This latter stage is only a momentary one, and dilatation of the vessels with an increase of blood to the part follows. The blood-stream in these vessels is composed of an axial and a peripheral zone, the solid elements of the blood being confined to the axial, and the liquid or plasma portion to the peripheral zone. Finally we see the polymorpho-nuclear leucocytes leaving the axial zone and migrating toward the

sides of the vessels. They first appear as beads on the inner side of the artery, then the leucocyte changes its form, and finally a portion of this white cell appears on the outer side of the vessel; then by virtue of its amoeboid motion it passes through the vessel wall and journeys onward to the seat of injury. Next in order is the exudation into the surrounding tissues of the fluid elements of the blood in the nature of serum, which carries with it a ferment which causes the formation of fibrin. In conjunction with this process we get diapedesis of a few of the red cells also. You understand, therefore, that an inflamed area is produced by a definite number of changes, and that if inflammation be allowed to terminate, we shall have present in the tissues red cells, white cells, fibrin, serum, bacteria, and necrotic tissue, all of which constitute the ingredients of an abscess. The changes which I have tried to describe are responsible for the presence of the four cardinal symptoms—heat, redness, swelling, and pain.

The escape of the solid and fluid elements of the blood into the tissues will naturally cause them to swell, and pressure on the sides of the flexible bloodvessels will lessen their caliber. The blood pressure is raised, because an effort is made in each diastolic movement of the heart to drive the normal quantity of blood through these tubes, in the normal amount of time. No provision is made by the heart for the changes which have taken place in the tissue.

We therefore find this condition present—blood rushing through at an increased rate of speed. The velocity of the blood, with the condition of the sides of the vessels, whose elasticity has been



interfered with, causes friction. Vaso-motor dilatation allows a greater amount of blood to rush to the capillaries and to redden the surface of the part. Heat is produced by the friction referred to before, and also by the excessive amount of blood dispatched to the part. This general disturbance in the tissues will cause pressure upon the sensory nerve-endings and produce pain. The degree of pain is always in proportion to the degree of distention and resistance of the tissues.

It is not necessary to deal specifically with the last symptom, impaired or lost function, because an understanding of the causes which produce heat, redness, swelling, and pain will naturally involve an equal understanding of the causes of impaired or lost function.

It is now a fact accepted by those competent to judge, that the removal of the cause is the first step in the progressive treatment of disease. Yet members of both the medical and dental professions, whose acts we must perhaps attribute to carelessness, are constantly making exceptions to the rule, and it is for this reason that I desire to present to this body some of the conditions and cases which are constantly coming under my observation.

First we will consider the treatment of abscessed teeth, a pathologic process which I believe is miscalled more often than any other condition which I can recall at this time. How many times do we hear the intelligent but thoughtless practitioner refer to abscessed teeth as ulcerated teeth!—though if requested to define abscess and ulcer, he would promptly reply that an abscess is a circumscribed cavity filled with pus, and that an ulcer is an open granulating sore. Now, if an ulcer is an open granulating sore, how can a tooth become ulcerated?

#### PATHOLOGY OF ABSCESS FORMATION.

In order to build a foundation on which to base my future remarks, I shall briefly describe what takes place in the tooth and in the surrounding tissues during the formation of an abscess. As the pulp is always the objective part in abscess formation, it will not be necessary to review the numerous causes which may effect an abscessed pulp. Suffice it to say that it is always due, first, to irritation of the pulp. When the blood supply is interrupted or cut off, the pulp ceases to be nourished and a degeneration takes place. All the progressive steps of inflammation which I have described will occur in the pulp, and if not interrupted will terminate in the formation of pus. The tooth becomes a foreign body and the system tries to expel it. The lodgment of the tooth in its bony socket prevents the accomplishment of this end, and we have two opposing forces: First, the system trying to expel the tooth; and second, the position of the tooth in the jaws preventing this expulsion. Thus we have irritation, the first step of inflammation. Then what happens?

The inflammatory processes repeat themselves in the tissues outside the tooth substance, and the system partially accomplishes its end by loosening the tooth. All abscessed teeth will become loose at some time during the process which I am describing. A breaking down of the surrounding tissues follows, with the formation of more pus in the tissues adjacent to the diseased tooth. Finally, the pus will manifest itself by burrowing in the line of least resistance through these tissues to the outer surface, often breaking through the face and making an ugly wound. Or, by infection, the inflammatory processes will repeat themselves in

the body substances, causing necrosis, which often endangers the life of the individual, as in the case which I shall describe. One thing is certain, that as soon as a tooth becomes a foreign body from any cause, nature never does and never will submit to its presence. The action of the system in trying to expel foreign bodies is many times beautifully illustrated in the cases where needles broken in the tissues of the fingers will present themselves later in the tissues of the arm.

#### THE FALLACY OF WAITING.

If, then, the removal of the cause is the first step in the treatment of inflammatory conditions, why do men persist in advising patients not to have abscessed teeth extracted until the swelling of the face subsides, and in supplementing this advice by stating that the extraction of the tooth would be a very dangerous procedure? Would these same men advise non-interference with a gangrenous appendix until the swelling of the abdomen had subsided? Would they recommend leaving a piece of steel in the eye, a piece of glass in the foot, or a splinter in the hand until the swelling of these parts had subsided? If they would not so advise, why do they do so in cases where a tooth is involved? If they do recommend postponing the extraction, I believe that I am justified in saying to them that they do not act in accordance with the fundamental principles of pathology, and that therefore they should not assume that responsibility which is associated with the treatment of disease which many times involves a life. Of course I do not recommend the extraction of all abscessed teeth, because many times the skilled dentist, by proper treatment, may prolong their period of use-

fulness for many years. What I do maintain, however, is that if the tooth is condemned, the swelling of the face or other conditions should not interfere with its removal, and the sooner it is extracted the better.

In the treatment of inflammation we may be required to employ external applications. Shall we advise the application of heat, or cold? Judging by my own experience in both hospital and private practice, I believe that I have seen more damage result from the application of hot poultices to the face than from any other one cause which I can remember. Here, again, I am forced to conclude that the practitioner who advises the application of heat in the first stages of inflammation for the purpose of aborting the abscess formation is not giving his patient the proper treatment, and also that the advice he gives is in conflict with tried and true theory and practice in the treatment of inflammatory conditions.

I stated in the earlier part of this paper that besides the removal of the cause, the removal of any of the cardinal symptoms would be a progressive step in the treatment. I believe that every condition which presents itself in inflammation is dependent on the preceding ones. In the early stages heat seems to be one of the predominating features. I apply ice, therefore, to remove this condition by keeping the parts cool through vaso-constriction, believing that I am limiting, if not entirely checking, the progressive action of the factors producing heat. I am describing the treatment which I would recommend in the incipient stages of inflammation, before the abscess has formed.

I cannot understand why practitioners apply hot poultices to prevent a condi-

tion which is not only made possible by heat, but is greatly aggravated thereby. Heat is one of the cardinal symptoms, one of the conditions we wish to eliminate on account of the important function which it performs in accomplishing that which we are trying to prevent. Basing my method of treatment on my conception of inflammation, I will say that I am satisfied to use ice in all cases except where pus has formed or where the inflammatory process has so far progressed as to make certain the formation of pus, and hence render impossible the abortion of an abscess. If pus has already formed, I use a knife rather than poultices, preferring a clear incision to the ragged wound which is made by pus forcing its way through the tissues and always leaving an ugly scar.

#### ILLUSTRATIVE CASES.

The following case will show what often may be, and many times is, the result of the treatment which I am condemning:

I was called to see a child five years of age who was suffering from an abscessed deciduous tooth. He had been taken to a dentist for advice some days previously. The dentist told the child's parents that to extract the tooth would be a very dangerous procedure. The tooth was not extracted, and the pain and swelling increased from day to day. The mother finally took the child to a physician for advice. He confirmed the advice already given by the dentist, but supplemented it by telling her to apply hot flaxseed poultices to the child's face. In forty-eight hours the poultices accomplished their end and caused an irreparable injury. The tissues became distorted and the pus finally forced itself through.

The physician continued to treat the child during the next five weeks, at the end of which time the whole of the left maxilla and a portion of the malar bone were involved by necrosis. I was then asked to see the patient, and found him in the condition just described. Pressure on the face anywhere below the line of the eyes would cause a large quantity of thick pus to flow from the break in the tissues under the eye, also from the nose and from the mouth. I advised an immediate operation, first explaining to the mother the possibilities of such a step in so serious a case.

Two operations were performed on the child. The first consisted in removing a large part of the maxilla from the lateral tooth back to the tuberosity of the maxilla. This section did not extend to the center of the hard palate. The method employed consisted in placing my finger between the teeth and cheek, holding the cheek out of the way while I dissected the cheek from the bone in such a manner that I could pass my finger up by the side of the jaw through the opening under the eye. By so doing I was able to simplify the operation, as well as getting a continuous passage. Irrigation also was made more thorough, and the small particles of necrotic bone, which have the power of reinfecting the parts operated upon, were washed away. At the end of four weeks a second operation was performed, which consisted in the removal of a portion of the malar bone. The child was finally discharged, cured, after having been subjected to two surgical operations and to eight weeks of suffering, all due to the ignorance or carelessness of a member of our profession.

From the observations and conclusions drawn from the study of diseases in our

hospitals it has been proved that micro-organisms are the principal cause in nearly every disease known to modern medicine. The pathologic manifestations vary, however, and in some instances we may find that the inflammatory process involves only the first or hyperemic stage, and in others we find manifestations of the last, or suppurative stage. In the oral cavity under these conditions we find caries and necrosis of both the osseous and muscular tissues, while in other cases the kidneys, lungs, liver, intestines, and the valves of the heart through the lymphatic glands become involved, and in other instances and by other avenues the brain. Indeed, it is beyond the capacity of the human mind to determine just when these minute forms of life cease to invade, cease to change physiologic to pathologic conditions, health to disease, life to death.

#### DEATHS FOLLOWING INFECTIONS OF THE MOUTH.

During the sixteenth century, Vulpian in his writings states that disfiguration and death are the result of toothache, and reports the death of Gosvin Halt, the Amsterdam physician who had his gum lanced to permit the eruption of a molar. Subsequently the gum became swollen, insomnia and delirium followed, until finally death relieved him of his sufferings. This condition is what today we should probably call septicemia, due either to the micro-organisms being introduced into the system from unclean instruments or to the instruments making an avenue through which the micro-organisms already present in the mouth entered the system.

Zakhavets reports the death of two healthy physicians, one from osteomyelitis, six days after the extraction of a

lower left second molar, and the other from peritonitis and osteitis. The first stage in the process of disease in each of these cases furnished also conclusive evidence that the infection was caused by unclean instruments. Banner reports many cases, among them one of special interest, namely, that of a student, age twenty-four years, who made a visit to a physician for the purpose of having a molar extracted. The physician broke the tooth in the attempt, and during the next twenty-four hours swelling ensued. Finally the periosteum became involved, and necrosis followed. The necrotic area was removed fourteen days afterward; swelling continued, there were chills, great debility, rapid and marked excursions of temperature, and pyemia; finally the right lung became involved with pus, and the patient died.

Delester reports several cases in which the inflammatory process spread to the brain, and the patient died from meningitis.

The following reports of cases from my own practice may be of some interest:

On December 4th, C. N., a girl, age seven, was referred to me by her physician. She was suffering from neuralgia involving the right side of the head, inability to sleep, loss of appetite, etc.

*History.* On November 30th she came home from school complaining of headache, with slight swelling of the right side of the face. Dr. H. was called, and found the child with a temperature of 105° F., with other symptoms which would suggest that she was in the first stages of some one of the exanthematous diseases. He prescribed, and visited the child on the next day expecting to find his diagnosis verified, but on the contrary the swelling had increased somewhat, with a drop of two degrees in the temperature. Examination of the throat revealed nothing to the experienced eye of this physician. He continued to visit the child for the next five days, keeping her



as comfortable as possible, but was unable to diminish the temperature more than one degree. The temperature remained at 102° during this time.

*Examination.* When I saw the patient she had a temperature of 102° F., with the other symptoms previously described. Her mouth seemed to be in a healthy condition with the exception of two or three badly decayed teeth distributed over the mouth. The child could not give the exact location of pain. In the right maxilla all the teeth were present, including a newly erupted first molar, which was apparently healthy as far as visual and instrumental examination could determine. Anterior to this was the second deciduous molar, decayed, although the caries did not involve the pulp. The condition was such as one generally sees in the mouths of children when caries seems to have stopped, not unlike the teeth of tobacco-chewers. There was no pain associated with the examination of the decayed tooth, not even on pressure. There was, however, slight pain when percussion was employed on the permanent molar.

*Treatment.* I finally decided to extract the permanent tooth, to the great disappointment of the parents, who thought that if any tooth should be extracted it should be the decayed one. Examination of the permanent molar showed unmistakable signs that my diagnosis was correct. Abscesses of about the size of small peas were found at the ends of the roots. All other parts of the tooth were normal, having no cavity, not even the small fissure cavity that is present in very many first permanent molars. The child made a rapid recovery. Her temperature became normal within twenty-four hours.

I shall now report one of many cases by which I hope to show the importance of the lower third molars in the production of disease:

On April 6th, L. M. manifested the following symptoms: Severe neuralgic pains, loss of appetite, sleeplessness caused by the pain, finally swelling of the right side of the face, sore throat, and interference with the motion of the jaw, followed by fever and chills. On the second day a physician was called, who evidently decided that the patient had some

tonsillar infection. He increased the man's suffering by making an incision through one of the tonsils. After three days the patient discharged this physician and called in another, who found him with the described conditions aggravated and a temperature of 104°. He immediately had the man transferred to a private hospital, where on examination he found a lower third molar badly decayed, which he immediately extracted without breaking, a large amount of pus following. The patient experienced relief, his temperature dropped on Thursday, April 9th. The man's condition remained about the same, swollen face, etc., until 3 o'clock in the morning of April 10th, when the patient was attacked by chills, followed by a rise in temperature of two degrees. I reached the hospital at 2 P.M.

*Examination.* The face was badly swollen, the swelling involving the sublingual and submaxillary glands, neck, temporal region, and ear. The patient was unable to open his mouth and was suffering intense pain. The tissues were swollen to such an extent that they were very hard, and it was impossible to get fluctuation. An incision had been made near the angle of the mandible internally before I arrived, yet nothing but blood issued from the wound. I introduced a probe into the socket whence the tooth had been extracted, but was unable to find any pus.

*Treatment.* I advised immediate operation, and the patient was etherized. The mouth was forced open with a mouth-prop; then, with a periosteal dissector, I freed the muscles from the bone extending from the angle to the first molar and down to the inferior border of the bone. The pus, which was deep-seated, now began to evacuate itself, until about four ounces was discharged. I then eurented the tissues forming the inside of the cavity, which was as large as a hen's egg, washed it thoroughly with a weak antiseptic solution, and packed the cavity with sterilized gauze. I dressed the wound each day, and at the end of three days referred the patient back to his attending physician, under whose care he made a full recovery.

In conclusion, let me state that I have tried to point out briefly the importance of a thorough understanding of the pathology of disease. I hope that I have

accomplished my aim, and if only one person in this audience has learned just one thing which will render his under-

standing of disease more complete, I shall feel that my visit to your city has been profitable to me.

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### DISCUSSION.

Dr. A. J. FLANAGAN, Springfield, Mass. I believe Dr. Black spoke of the optimist and the pessimist, and it would be well, perhaps, to give the definition of these two words here today. The pessimist, little Johnny says, is the fellow who cannot do it, and little Tommy says that the optimist is the fellow who does not care what happens—provided it does not happen to him. Last night Dr. Black gave a demonstration on a model of a tooth, and as I read Dr. Power's paper it appeared to me that it would be interesting if some pathologist would take a tooth model, and fit it with these little rubber tubes that Dr. Power has spoken of, and demonstrate before all dentists the effect of forcing certain materials through small tubes when there is an obstruction that interferes with the forcing. Dr. Power gave a most acceptable illustration of what could be called an everyday illustration of inflammation. He carried me back twenty years to the time of my student days in Philadelphia. At that time we had in our institution a man who perhaps for his day foreshadowed the pathology that is bound to come in dentistry. Many of the students who assembled at the various lectures of that teacher thought he was a little off, and why? Because, as Dr. Black said today, it is almost impossible to induce the average dental student

to take up a thorough and explicit study of what is known as pathology. Dr. Black says that you cannot make him take it up; I say, make him take it anyway, as Garretson used to preach. He was a seer, and he was not only a seer, but a believer and a doer. Garretson in my humble opinion was one of the greatest minds that have crossed the threshold of dentistry in the last fifty years, especially when you take into consideration his conception of dentistry. His dentistry was not the dentistry of the fellow who "lives in the tooth," but dentistry not only of the teeth but of the associated parts. I am pleased to see today that a young man has stepped in here, and has given us an illustration of inflammation not alone of the tooth but of the surrounding parts, and when Dr. Power says that all progressive disease can be classed and illustrated as something related to what is known as inflammation, he has given us a great truth to take away with us.

I am going to speak now as an ordinary practitioner of dentistry groping in the dark and trying to do something for his patients. By the term "ordinary dentist" I mean the man who has some patients that are earning from a dollar and one-half to three dollars per day, and trying to support a family. I have patients with more income per day than

that, but I am not of the class of dentists who come before us in associations and tell us that we must not do so and so, and if you analyze the conditions you will find that that person is practicing in a large city with a select *clientèle* that enables him to charge at least ten dollars per hour for his time. His patients are educated people, and yet that person will say to us who are practicing on the dollar and a half man, You must do so-and-so. I wish to sum up by saying that this is an imperfect world, and we are a part and parcel of it, and cannot accomplish perfect things in an imperfect world; this can be applied to dentistry as well as to anything else. Now, you may ask, What is this all about? It is just this: When we have people come into dentistry and recognize the fundamentals, and take the family of the dollar and a half man and do something for him, giving him the greatest comfort possible, even though men who are earning ten dollars an hour for their time will have nothing to do with him, who is doing the greatest good for humanity and for dentistry?

That brings me back to the question of what to apply in order to destroy the pulp—whether we shall use arsenic or whether we shall inject something into the pulp? We have listened a great deal to this question of removal of pulps, and I wish to say that it is about time that some of these pathologists who have studied advanced dentistry demonstrate to us, not in talk, but in facts and figures, that arsenic properly applied in the proper quantity and watched from the start to the finish is producing any more lame teeth than the application of cocain, or some other drug.

I did not wish to rise at the time Dr. Rhein spoke, when called on by the

president to discuss the question, for what he said was along the line of inflammation, and Dr. Power's paper—from that point of view—is equally along the line of pulp destruction, but I think it is about time that some of the young men who have risen and asked for information take up this question, and study it and understand it so that they will be able to give the results of experience, and communicate the facts demonstrated, especially in the pathological laboratory. The time seems to have dawned when we should come to these assemblages and talk intelligently from experience and from facts demonstrated in the pathological laboratory on the subject of inflammation, on the question of pulp destruction, on pericemental troubles, on stomatitis, on the extreme conditions of gangrenous stomatitis, and on noma, and how to handle them. When I hear some men say that the medical men do not want to take these cases, I would say that the advanced man in medicine will be only too happy to turn these cases over to a dental practitioner if he feels that he is able to handle them.

The time has come when we must help these colleges that Dr. Black speaks of. Why do so many men go to the college that offers the least resistance? Because according to the usual, the common acceptance in the average mind, dentistry is a calling of a material nature; but when it comes to the question of an inflammatory process, the question of material is not there, and we must inculcate in the mind of the average person that we have therapeutics, that we have pathology, and that we have laboratories in our colleges, and that the students are instructed as properly in the clinical as in the prosthetic laboratory.

Dr. OTTO E. INGLIS, Philadelphia, Pa.



Believing that the best development of the thought expressed in a paper is not always accomplished by praise but by truth-seeking criticism as well, I would say that while in the main I am much pleased with Dr. Power's paper, I would take exception to one or two of the postulates which he has laid down.

After giving a comprehensive view of inflammation in general, Dr. Power speaks of abscess formation as being always due, first, to irritation of the pulp followed by degeneration. He says as follows: "All the progressive steps of inflammation which I have described will occur in the pulp, and if not interrupted will terminate in the formation of pus. The tooth becomes a foreign body and the system tries to expel it." I am inclined to think that in writing the paper Dr. Power overlooked an intermediate step in the pathology with which he is familiar, but which he has not set down. His postulate of irritation followed by pus formation is a true one, but irritation causes an abscess or ulceration of the pulp instead of an apical abscess, otherwise the pulp must first die through simple inflammation or hyperemic changes. This abscess or ulceration may continue for some time, and has symptoms distinguishing it sharply from apical abscess. It is only through pulp putrescence or direct infection of a previously aseptic apical tissue that an apical abscess occurs via the pulp-canal, though very rarely an apical swelling simulating abscess may be due to an abscess of the pulp.

Regarding the expulsion of needles, it seems to me that migrations within tissues are more directly referable to the influence of muscular movements than to efforts at expulsion. This is more apt to be accomplished by the inflammatory process. I am thoroughly in accord with

the idea of extraction of a tooth during abscess formation in the second stage, or while bone suppuration is in progress, if the tooth is one destined for the forceps. If necessary, the alveolus may be sterilized, curetted, and packed with antiseptic gauze to prevent it from filling with a clot. This should be removed in, say, twenty-four hours and the alveolus repacked or not, as indicated. If the extraction be performed without packing, as is often done, and untoward symptoms present, it will be easy to reach the apex of the alveolus by sweeping out the clot. It certainly seems rational to remove the source of offense, which is the putrescent contents of the root-canal. If the abscess be so advanced that no sufficient relief can be obtained through the alveolus, operation must be performed.

Dr. Power's experience with the medical application of the hot poultice is one we all have met with. With all due respect, it is astonishing how slowly the average physician adapts himself to our ideas of dental pathology and treatment. Certainly the hot poultice applied to the face in acute apical abscess is to be condemned, but if diagnosis be accurate, it can be allowed in inflammation or hyperemia of the pulp, in which counter-irritation is desirable and can do no harm. In such cases cold is not applicable.

Dr. Power has cited some interesting cases, which show us how careful we should be in our differentiation of dental pathologies, so that rational treatment may displace such treatment as is based on empirical lines.

Dr. O. T. RULE, Meriden, Conn. This paper by Dr. Power is the most excellent essay that I have ever had the pleasure of listening to on this subject. There are one or two points of which I wish to speak. One is the application of heat.



Our circulatory system may be compared to a hot-water heating system in a house, the heat and boiler being respectively the circulatory centers. For illustration, suppose we apply heat to the pipes at a point where the outflow becomes inflow. The water absorbs the heat and is warmer when it reaches the boiler than if no external heat had been applied. Or apply cold instead of heat. The water when it gets to the boiler is cooler than if no cold had been applied.

Now apply the illustration to the circulation of the blood. The circulation in the teeth and face is at a point where the outflow becomes inflow.

As there is always heat with inflammation, the application of external heat simply furthers that condition, with the blood absorbing more heat, and having the tendency to increase the temperature of the blood current which is returning to the heart, and each time it is sent out again perhaps being a trifle warmer, and so eventually helping in the breaking down of the tissue in suppuration.

But apply cold to an inflamed area, and the heat of the area is radiated instead of being augmented, and the blood current is cooled by the application, thus assisting in the conservation and resolution of tissue. Therefore we should apply moist heat only when and where we wish to have an abscess focus.

With regard to the matter of extracting teeth in an abscessed condition, I am glad to hear Dr. Power advocate so plainly the removal of the cause, if we decide that extraction is to be the final result.

In this connection I recall a paper published some time ago in the *Dental Cosmos* in which were included replies by eminent men in the profession to a list

of questions on this subject of extracting abscessed teeth, and a great majority voiced the opinion that extraction, once decided upon, is the best thing at any stage. So it seems to me that we should enlighten the medical practitioner on this matter of poultices.

With regard to the question of extraction or making an incision into an abscess, as cited by Dr. Power, I cannot see the difference between making a wound in the abscess and thus opening the circulation, and extracting a tooth and thus opening the circulation, providing that in each case we do our best in the beginning to render the area of operation aseptic.

In regard to the tooth being a foreign body, I should like to make this observation. It seems to me that the elongation of the tooth is not due to the effort of nature to expel the tooth, but to the infiltration and thickening of tissues around the apex. As the inflammation increases the blood pressure around the tooth, the apical tissues necessarily thicken, and the tooth is mechanically projected from its socket.

The effort of nature is to expel the infected pulp and the pus which results from it. But the tooth, the result of the normal activity of certain organs, cannot be a foreign body as long as it has a vital organic attachment to the pericementum.

The pus burrows in the direction of least resistance. If the point of least resistance be down at the side of the root, it will discharge at the gingival margin; if toward the lingual, it will occur in that direction, or if toward the buccal surface, it will occur at that point.

It seems to me that there is an error in concluding that the elongation of the tooth is the effort of nature to cast it off

because it has become a foreign body, being at that stage still held by the pericementum.

Dr. Flanagan has spoken of pericementitis due to the absorption of cocain in pressure anesthesia, and the application of arsenic for devitalizing the pulp.

I do not recall a case where I had inflammation over the roots from applying arsenic, but I did have a case where the arsenic came in contact with the gum tissue, and although no serious results ensued, yet there is danger of serious trouble in such cases. Therefore having found an almost magical preparation in the combination of cocain and adrenalin in Parke, Davis & Co.'s No. 151 tablets, I have thrown  $As_2O_3$  away, and shall never use any more of it. I have had some soreness from forcing in the cocain, but I find that lessening as I become more adept in using it.

Dr. F. T. MURLESS, Jr., Hartford, Conn. In my opinion, without attempting to be epigrammatical, every little item of training that is involved in some higher attainment influences all one's minor activities. I mean by that, that the man who knows a little more about inflammation, its cause and its results, is that much better able to produce correct fillings and to do his daily routine work creditably; and not only so, but by this means he adds zest to routine work. I wish to emphasize the idea that each of us should make the leading thought in our minds improvement, advancement, educational development. Even if the accumulated facts are fragmentary in character, these bits which we gather often come into play in unexpected ways. In fact, all that one knows is frequently demanded in meeting situations of the sort which Dr. Power has outlined. We want for ourselves to do this, we want

to do it because we wish to succeed, every one of us, in our chosen profession. So I want to repeat that what Dr. Power has said about inflammation is pertinent. If we have known and forgotten, let us be thankful that he has reminded us, and let us employ all that we know, keeping fresh on what we know and using it to the best of our ability and to the glory of our profession.

Dr. POWER (closing the discussion). I wish first to thank you for the consideration which you have given the paper which I have presented this morning.

First is the question of the importance of the knowledge of pathology. Someone in the discussion regretted the fact that pathology is not taught in dental schools—I think it was Dr. Flanagan. I indorse all that he has said relative to this most important subject. I believe that Dr. Black said that it is difficult to interest students in the subject. It seems to me that were I a teacher and an educator, I should interest them in it, even if it were difficult. The whole trouble goes back to the question of commercialism. For my part I would rather have five students and teach them what I knew would reflect credit upon our profession, than to graduate a hundred men who failed to recognize the value of the very foundation of the scientific study of disease. General dental work is a great work, and it can never be substituted, but we must be skilled in more than the mechanics of our profession. If three years are not enough to include the study of disease and its causes, then I say add another year. The medical profession is only too willing to give us recognition; they are just as anxious to consult us as we are to consult them. We are the ones to place the true value upon ourselves and

our work, and the medical profession and the public will accept us according to that value. There is no excuse for our not knowing what takes place during an inflammatory process. Many times the fault is not with us, but with our early professional training. Pathology as it is taught in most of the dental schools throughout the country consists of a theoretical course extending over a period of a few weeks, which simply gives us a poor definition of what the subject really does consist of. We cannot reflect credit upon our profession unless we understand its importance in the treatment of disease.

Dr. Rule says that he has had one case and does not want to have another. I say that if he continues to use arsenic he will not have another case, because he has learned from that one case wherein his technique was faulty. Of course we should seal arsenic when we place it in a cavity; if it does leak on the gum, then it proves that our technique is faulty. I am not advocating the use of arsenic, because I believe in the efficacy of cocain, but I do say that you can use arsenic without the slightest danger to either the patient or to the usefulness of the tooth.

I really do not see in what respect Dr. Inglis has taken any exception to anything which I have said regarding the subject of abscess formation. I stated that the inflammatory process first appeared in the pulp, and he said that it appeared probably months back, and that before we get an apical abscess we get a gangrene of the pulp. We cannot have gangrene of the pulp unless an inflammation has preceded it, and wherever we find gangrene or necrosis we must concede that all the other stages of inflammation have preceded them in the tissues involved. In the expulsion of the needle,

of course we have muscular activity, but it is brought about by the presence of the foreign body—in this case, the needle. A glass of sufficient magnifying power will show the blood rushing through the area of infection at an increased rate of speed started by the presence of the irritating body. Even if the needle is clean, an inflammation will cause an increased muscular activity, and will drive the needle along in the lines of least resistance in its effort to expel it from the system. In the experimental laboratory we find that muscular activity is in proportion to the amount of stimulation applied to the muscle. Place a rusty needle in the tissues and an abscess tract will follow the needle. We will then have a destruction of the adjacent tissues, and all the stages which I mentioned in connection with the tooth will present themselves here with the presence of the needle.

There is no disease which does not embrace a knowledge of all the principles of pathology. Inflammation is perhaps the most important branch of pathology, because all disease commences with an inflammatory reaction. It is the A B C of pathology; it is not a complex problem. Heat, pain, redness, and swelling are the four cardinal symptoms of inflammation. Study the little black-head, so called, on the face. We examine with a mirror and we find redness, we place our finger upon the spot and we find heat present. The next day, possibly, there will be a protrusion of the skin and tenderness on pressure. Later it breaks, with an evacuation of pus. You can readily study every step of inflammation that takes place there, and it is the same everywhere in all other portions of the body. We must not confine ourselves to the study of the teeth alone,



or to any small portion of the body. We should study pathology in general, and we shall of necessity include the diseases of the teeth and pulp. You cannot take any one disease or any particular part of medicine which has an organic relation with other parts and separate them. We must know the whole in order to thoroughly understand a part.

Someone objected to the use of arsenic because it produces inflammation in the tissues adjacent to the teeth. We must not forget those fundamental principles which are involved in an inflammatory process. If we wish to destroy the vitality of the pulp, it is reasonable to believe that a pathologic condition already exists in the tooth, and also that an inflammatory reaction has occurred already. I should not hesitate to use arsenic in any case, and there are some cases where its use is of special value to me. In the hands of a person who has been graduated from a dental school, possessing the average care and judgment, the use of arsenic will not cause any more injury to the oral tissues than would the use of creasote or carbolic acid. Even if a little arsenic does escape on the gum, necrosis of the soft parts will present itself first, and this can be easily treated by cutting it away.

I do not pack sockets except in cases of hemorrhage following extraction. We sometimes find cases where the extraction of the tooth does not break the abscess. In those cases I open the abscess with a curet or bur if necessary, and evacuate its contents.

Dr. Rule referred to the danger of opening into the circulation and making a new avenue through which the system could absorb poisons. While there is some danger, we are justified in incising diseased tissues, because we are selecting

the most probable curative process for the welfare of our patient.

Dr. RULE. My observation in regard to that was that some practitioners object to taking out the tooth because of that danger to the circulation, but they do not hesitate to lance an abscess.

Dr. POWER. I still believe that the abscessed tooth acts as a foreign body. The fact of the tooth being elongated convinces me that nature is trying to expel it from the body. Dr. Rule says that the elongation of the tooth in the condition described is due to the swelling, thickening, and infiltration of the tissues. Here we agree, and I say again that it is nature's process of ridding itself of that foreign body. If a tooth in this condition is not a foreign body, why does it become elongated? Why do the tissues become infiltrated, and why, if we extract that tooth, do these tissues resume their normal condition?

Dr. RULE. That is nature's effort to rid itself of irritation. The tooth is not a foreign body as long as it has an organic connection, and it has an organic connection with the socket in that part through the peridental membrane, and I contend that the elongation of the tooth is due to the swelling and infiltration of the tissues about the end of the root.

Dr. POWER. But the tooth is the causative factor of the irritation. The tooth which I am describing is an abscessed tooth, and a tooth in an abscessed condition acts as a foreign body. If the pulp is gangrenous, it is a part of the tooth. I do not recommend the extraction of all of these teeth, but on the contrary I advise the removal of that portion of the tooth which is foreign to the physiological laws. I still contend that the swelling and the projection of the tooth from its socket is evidence that it is regarded



by nature as a foreign body, and that nature is attempting to rid itself of that foreign body. Dr. Inglis says that it is due to muscular contraction. But what causes the muscular contraction and what is the object of attainment in the muscular activity so described?

In my paper I have endeavored to point out the fundamental principles that govern the treatment of all disease, and if I have cleared any of the problems which present themselves in the treatment of any pathological conditions in the mouth, I shall regard my visit to your society as most profitable to me.

#### REPORT OF THE COMMITTEE ON NECROLOGY.

The next order of business was the report of the Committee on Necrology, by Dr. E. S. GAYLORD, New Haven, as follows:

##### Dr. Albert Newton Gaylord.

Dr. Albert Newton Gaylord died at Binghamton, New York, March 19, 1909, after an illness of five months, in the thirty-seventh year of his age.

Dr. Gaylord was born at Binghamton, New York, January 26, 1873, where he received his early education, being graduated with honors from the scientific department of the Binghamton high school. Very early in life he gave evidence of unusual mechanical taste, and was always most happy when time permitted his presence in a workshop of his own construction. He delighted in electrical science, to which he made valuable contributions, one of which was an electrical time indicator and register, which occupies a very important position in the manufacturing world.

Dr. Gaylord was a graduate of the dental department of the University of Pennsylvania, and immediately established himself in the practice of his profession in the city of Philadelphia, where he remained about eight years. He then spent a year in New Haven, withdrawing in June 1907 to New York city, where he found a field best suited to his

taste, until his fatal illness terminated very flattering prospects of professional and social eminence. By his pre-eminent mechanical genius he leaves in the mouths of many appreciative patients rare specimens of artistic skill and usefulness.

He was a member of the National Dental Association, Philadelphia Academy of Stomatology, Alumni Association University of Pennsylvania, New Haven Dental Association, honorary member of the Bridgeport Dental Association, member of the First District Society, Institute of Stomatology, and Odontological Society of New York, New York Auxiliary Delta Sigma Delta Fraternity, and Interstate Dental Fraternity; he was also past-master of Athelstan Masonic Lodge of Philadelphia.

The funeral services were held at the home of his birth, Sunday afternoon, March 21st; interment was in the family plot in Forest Cemetery.

He is survived by his parents, two sisters, wife, and young daughter.

##### Dr. Horace Sheldon Bascom.

Dr. Horace Sheldon Bascom died May 11, 1908, at his home in New Haven, in his sixty-third year, after an illness of six months. Dr. Bascom was born in Southampton, Mass., January 8, 1845. His early life was spent in his native town, until arriving at the age of twenty-one, with a mechanical instinct, he determined to enter the dental profession, and became a student with Dr. Nelson Stevens of Batavia, N. Y., as preceptor, and afterward of Dr. J. N. Davenport of Northampton, Mass. In 1870 he located and built up a successful practice in New Haven. Dr. Bascom was of a retiring disposition, but a close observer of men and things, and with his mechanical ability he became a critic in weeding out methods in practice, which, coupled with mature judgment, secured for him a loyal *clientèle*, who mourn his loss.

Dr. Bascom was a member of the Northeastern Dental Association, the New Haven Dental Society, and the New York Institute of Stomatology. In July 1901 he was appointed state dental commissioner, serving for two years. When he found his duties as commissioner were too great a tax upon his health he resigned the office, much to the regret of his fellow members of the board.

Dr. Bascom is survived by three daughters, the youngest, Dr. Helen Bascom, a graduate of the Philadelphia Dental College, now conducting a successful practice in her native city.

EDWARD S. GAYLORD,  
CLINTON W. STRANG,  
JAMES McMANUS,  
J. TENNEY BARKER,  
LOUIS L. BEACH,  
*Committee.*

Motion was made and carried that the report be received and placed on file.

The president, Dr. Beecher, was then presented with a gavel by the association.

#### ELECTION OF OFFICERS.

The next order of business was the election of officers for the ensuing year. The Committee on Nominations, through its chairman, Dr. Griffith, presented the following list of nominations:

*President*—Dr. F. W. Brown, New Haven.

*Vice-president*—Dr. F. T. Murless, Jr., Hartford.

*Secretary*—Dr. R. H. W. Strang, Bridgeport.

*Treasurer*—Dr. W. V. Lyon, Bridgeport.

*Librarian*—Dr. F. G. Baldwin, Ansonia.

*Editor*—Dr. L. L. Beach, Bristol.

*Executive Committee*—Dr. H. A. Spang, New Haven, Chairman; Dr. A. E. Cary, Hartford; Dr. W. S. Smith, Mystic.

Motion was made and carried that the report be received and that the secretary cast one ballot for the entire list.

Dr. Brown, the newly-elected president, was presented to the society and expressed his thanks to the association for the honor conferred upon him.

There being no further business to come before the association, the meeting was declared adjourned until the next annual meeting.









TRANSACTIONS

OF THE

Connecticut  
State Dental Association

AT ITS

Forty-sixth Annual Convention

HELD AT

NEW HAVEN, CONN.

April 19 and 20, 1910.

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PHILADELPHIA  
PRESS OF THE "DENTAL COSMOS"

The S. S. White Dental Mfg. Co.

1910



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TRANSACTIONS  
OF THE  
Connecticut State Dental Association,

AT ITS  
FORTY-SIXTH ANNUAL CONVENTION,

HELD AT  
New Haven, Conn., April 19 and 20, 1910.

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TUESDAY—Morning Session.

THE forty-sixth annual convention of the Connecticut State Dental Association was held in Warner Hall, New Haven, Conn., on Tuesday and Wednesday, April 19 and 20, 1910.

The first meeting was called to order on Tuesday morning at 11 o'clock by the president, Dr. Frederick W. Brown of New Haven, Conn.

The reading of the minutes of the last meeting was on motion dispensed with, on account of their having appeared in the printed Transactions.

The President then appointed the following as the Nominating Committee, with instructions to report at the Wednesday morning session: Drs. A. W. Crosby, F. Hindsley, W. O. Beecher.

The next order of business was the report of the treasurer, Dr. W. V. LYON, Bridgeport, as follows:

TREASURER'S REPORT.

NEW HAVEN, April 19, 1910.

*Receipts.*

From Dr. F. T. Murlless, Jr.....	\$549.73
“ dues .....	402.00
Total .....	\$951.73

*Disbursements.*

Expenses to date as per vouchers...	\$176.72
Balance on hand .....	\$775.01
W. V. LYON, Treasurer.	

On motion the report was accepted.

The next order of business was the report of the Auditing Committee, by the chairman, Dr. H. A. Spang, who reported that the Auditing Committee had

examined the books of the treasurer and found them to be correct.

#### REPORT OF THE BOARD OF CENSORS.

The secretary, Dr. STRANG, then read the report of the Board of Censors, which consisted of the following applicants for membership:

Geo. F. Lancaster, 86 Bank st., Waterbury.  
Robert J. Williams, Greenwich.  
John F. Barton, 197 Asylum st., Hartford.  
Franklin E. Sullivan, 136 Fairfield ave., Bridgeport.

Jewell M. Gompertz, 276 Orange st., New Haven.

Jas. H. Kowlishaw, 902 Main st., Hartford.  
William D. Dow, 150 Main st., Bristol.  
Nelson J. Goodwin, Jr., 783 Main st., Hartford.

George E. Pomeroy, 26 State st., Hartford.  
Blake A. Sears, 839 Main st., Hartford.  
Nicholas J. McKone, 686 Main st., Hartford.

Clarence L. Gowers, 839 Main st., Hartford.

Joseph A. Moran, 839 Main st., Hartford.  
S. Lawrence Abel, 839 Main st., Hartford.  
Owen F. McCabe, 26 State st., Hartford.  
Ambrose H. Devereaux, 1110 Chapel st., New Haven.

William H. Gregory, 324 Main st., Stamford.

Clifford W. Vivian, 140 Main st., New Britain.

R. M. Gaylord, 1110 Chapel st., New Haven.

Dr. McLean moved that the secretary cast one ballot for the society, electing the list of applicants as presented.

Motion carried, and the list of applicants declared duly elected to membership in the society.

The Secretary then read a communication from the National Dental Association requesting the Connecticut Society to join the National Association as a body, the proceedings of the society to be published in the National Association journal on terms to be arranged later.

Motion was made and carried that the matter be laid on the table until a later session.

The Secretary next read a communication from Dr. Brophy with regard to the International Miller Memorial Fund.

Motion was made and carried that this also be laid on the table until a later session.

#### REPORT OF THE COMMITTEE ON NECROLOGY.

Dr. E. S. GAYLORD then read the report of the Committee on Necrology, as follows:

##### **Dr. John T. Metcalf.**

Dr. John T. Metcalf died at his home in Brooklyn, N. Y., October 29, 1909, aged ninety-one years.

Dr. Metcalf was born in New York city, October 17, 1818. After deciding upon his life-work, he entered the dental office of Dr. Charles Allen of New York city, remaining several years. He then removed to Nantucket, Mass., and commenced practice. In 1857, at the urgent request of President Woolsey of Yale College and others, he removed to New Haven, where he immediately established himself in a very lucrative practice. He remained in New Haven until 1869, then removed to New York to become associated in practice with his cousin, Dr. Wm. H. Allen, remaining in New York until reaching his fiftieth year in practice, when he retired. Dr. Metcalf was one of the charter members of this association, served upon the first executive committee, and was one of the early presidents of the association, retaining his membership in the society until he retired. He was the discoverer of the value of oxychlorid of zinc as a filling material for teeth, and was the first to place it in the hands of the profession.

Dr. Metcalf was a man of rare attainments, an inborn gentleman, courteous and affable to all, and in practice excelled by few. It was always a pleasure to meet him socially and professionally; he was a fund of information, and to the time of his death retained his mental activity unimpaired. He

is survived by a son, Dr. William H. Metcalf of New Haven, who is a member of this association.

#### **Dr. E. Treat Payne.**

Dr. E. Treat Payne died at his home in Darien, Conn., April 15, 1910, aged seventy-two years.

Dr. Payne was born in Prospect, Conn., September 24, 1838. His early education was received at the Seabury Academy in Cheshire, and in the Connecticut Literary Institute in Suffield. He then spent three years in mercantile pursuits, after which he entered the dental office of Dr. Asa Hill of Norwalk, remaining but one year, when he enlisted in the United States army for one year's service. At the expiration of this term of service, he took the degree of D.D.S. at Baltimore College, then opened an office in Stamford, Conn., remaining until the opportunity presented to purchase the practice of Dr. A. C. Hawes of New York city, where he met with such success as to enable him to retire from practice in 1895. He then spent five years in foreign travel, returning to open an office for the second time in Stamford. Soon, however, failing health compelled him to abandon practice. He removed to Darien, where he remained until his death. His wife survives him.

#### **Dr. Wm. H. Loomis.**

Dr. Wm. Horton Loomis died at his home at Rockville, Conn., November 7, 1909, of neuritis, in his sixty-eighth year.

Dr. Loomis was born in West Springfield, Mass., April 17, 1842. He received his education in the high school of Westfield, Mass., Williston Seminary, Easthampton, Mass., and the Connecticut Literary Institute, Suffield. He enlisted at Westfield, May 1861, as a private in Company K, Tenth Regiment, Mass. Volunteer Infantry, and was promoted to corporal, sergeant, and first sergeant consecutively. He was engaged in seventeen battles, wounded at Cold Harbor, Va., and honorably discharged in July 1864. After leaving the army he entered the office of Dr. Elias Strong in New Haven as a dental student, remaining four years. He then opened an office in Rockville, where he enjoyed a lucrative practice until he died. He became a member of this association May 20, 1890, was a member

of the Northeastern and Hartford Dental Societies, and also served one term as member of the board of dental commissioners. Dr. Loomis was a member of the Rockville City Council for six years. He was elected mayor of Rockville in 1899 and reelected in 1901, proving his efficiency as head official in the administration of city affairs.

Dr. Loomis was junior vice-department commander of the Connecticut G. A. R., was also a member of the Connecticut Army and Navy Club, and the Connecticut Society of the Sons of the American Revolution. He was a prominent mason, being a Knights Templar, and member of the Mystic Shrine. In 1904 he was elected to the state legislature from the town of Vernon, and during his term of office served on important and special committees. He was married in 1866. His wife and two sons survive him.

#### **Dr. Henry J. Stevens.**

Dr. Henry J. Stevens died in New Haven, October 2, 1908, in the eightieth year of his age.

Dr. Stevens was one of the sturdy and influential men of his time. His early history we are unable to obtain. He was a resident of and conducted a successful practice in New Haven for more than fifty years. He was one of the charter members of this association, and served on its first executive committee. Later in life he became less active in society work, although maintaining his interest and continuing his practice until a few months before his death. His wife survives him.

#### **Dr. D'Alenson Caulkins.**

Dr. D'Alenson Caulkins died in New London, Conn., March 10, 1910, in the sixty-third year of his age.

Dr. Caulkins was a pupil of Dr. W. W. Sheffield, and remained with him a number of years. He then practiced his profession two years in Troy, New York, after which he returned to New London, where he practiced continuously until his death. He was a valued member of this association, a member of the New London County Dental Association, and Brainard Lodge, A. F. & A. M. His widow, daughter, father, and sister survive him.



**Dr. Edward W. Pratt.**

Dr. Edward W. Pratt died at his home in East Hartford, Conn., July 25, 1909, aged forty-seven years, his death resulting from an injury received in falling from a trolley car near his home.

Dr. Pratt was born in Essex, Conn., and was of the ninth generation of the family of William Pratt, who settled in Hartford in 1636. Dr. Pratt received his early education in East Hartford. At the age of fourteen he entered the South school of Hartford, which he attended for two years, and was later graduated from the Hartford public high school. He was a graduate of the Philadelphia Dental College, class of 1885. For a short time he practiced in Glastonbury, from there he removed to East Hartford, where he remained in practice until his death. He was a representative in the state legislature from East Hartford from 1897 to 1901, when he received the appointment as judge of the East Hartford court from Gov. R. S. Woodruff and was always commended by the state's attorney for his thorough service. Dr. Pratt was a mason of high degree, and also a member of the Royal Arcanum. He rendered very effective service in sustaining and amending the state dental laws, and served as dental commissioner for four years. His wife and one son, his mother and two brothers, survive him.

Respectfully submitted,

E. S. GAYLORD, *Chairman*,  
JAMES McMANUS,  
CLINTON W. STRANG,  
J. TENNEY BARKER,  
LOUIS L. BEACH,

*Committee.*

Motion was made and carried that the report of the Committee on Necrology be received and published in the Transactions.

Dr. JAMES McMANUS. Mr. Chairman, we have with us this morning one of the veteran members of the profession, who I understand will have to leave on an early train this afternoon, and I think perhaps the members of the society would like to have him address us before he

leaves. I refer to Dr. C. S. Stockton of Newark, N. J.

The chairman then called upon Dr. Stockton, who spoke as follows:

Dr. C. S. STOCKTON, Newark, N. J. *Mr. President and Gentlemen*,—I want to thank you for having had the privilege and pleasure of visiting this beautiful city once more on an occasion extremely pleasant for me, the occasion of honoring Dr. Gaylord last night. I thought I would like to stay over until noon today, and see the other members of this society.

Dr. McManus and I have been friends for many years, also Dr. Gaylord and Dr. Strang, although not so intimately, and I naturally had the desire to look into your eyes and faces this morning and see the members of the Connecticut Society. How great an advantage you young men, whose hair is not silvered by age as is mine and that of others here, have over what we had when we entered the profession. Then anyone could enter upon the practice of dentistry when he thought he was qualified to do so. Think of that for a moment, gentlemen, and contrast it with what is required today—a high-school education, graduation from a college before you can even be considered qualified to ask for a license; and then you have to pass a pretty thorough examination of the board of examiners, which is one of the best things that has ever occurred for the profession of dentistry. In the early days the colleges were commercial, and I am not saying that they are not to a certain extent so today, not caring very much for the qualifications of those turned out. But when they know that the examining board is to review their work, they are much more careful how they confer the degree. That is just a thought—how

much better you young men, how much better dentists you should be than we older ones are. Some of us have a reputation for being pretty good dentists, yet how much better ones you should be when you think of your advantages!

While my hair is not so gray as that of some of those here, I want to state to you a fact. I saw the first dental engine that ever revolved a bur. Dr. W. G. Bonwill invited Dr. James Truman, who has lately been honored by a dinner in New York, Dr. Barker, and myself, to witness the first dental engine. Bonwill, with his enthusiasm, revolved it rapidly and bored into wood, marble, and ivory, and Truman turned to me and said, "Stockton, that will never do. You will bore right through a tooth." Now we have engines that go not only by foot, but that make four thousand revolutions a minute by electricity. The contrast in my memory as I go over many other things is very great, and it behooves you, if you are to take our places—and you soon will—that you should be very much better dentists than we are.

It was a very great pleasure to me to be here last night, as it is always, when I see men whom I love, honor, and appreciate. They have done wonders for dentistry, and I could begin with Boston in the East and go through the land to California, and name to you the men who have made dentistry what it is today. The thought that I wish to leave with you is that you have an inheritance, you young men starting in dentistry—an inheritance to carry out what we have done and what we are leaving for you.

I was very glad to hear your address, Mr. President, and I was interested to hear your remarks as to your method of electing officers in the society. Our system in New Jersey is that men must

work up to the position of president. They are put on committees, and if they show themselves worthy workers they are advanced right along, and in that way we get good men into the presidency, and we have never had an instance where a young man who has done his duty in the committees has been turned down. He has an ambition to work for the presidency, which I say is a worthy ambition for any young man. Some say it is wrong for one to work for the presidency, but I say No. Do the work in the office where you have been placed, and do it well, and it is an honor to you if you have qualified yourself in such a manner that your fellows appreciate what you have done, and reward you for it by making you president.

And one thing, Mr. President, I want to say to you, now that you are finishing the presidency of this society. Don't think that is all the work you have to do. Some think when they reach that point they can step down and out, but I do not think so. It should be only a step to greater work in the future, and let not the simple fact that you have been president of the society relieve you of any further work.

With regard to increasing membership, we have another way of getting members into our society. We have had the same difficulty that you have had here, in comparison with the number of registered dentists in the state, and we have said to the young men who now pass the examining board, "Come into the society, join the state society, and for the first two years your dues will be remitted." That has been an incentive to many of these men, a great many of whom had spent what they had in their education, and who therefore hesitated to come into the society because of the ex-

pense. Our annual meeting in July of last summer was the first at which we tried that plan, and a great many young men came in, and I recommend the plan to you.

There are a great many other things that I could talk to you about, but there is only one that I would like to emphasize at this time, namely, the matter of interchange of license. It does seem to me, gentlemen, that when anyone has fulfilled all the requirements of education, of graduation, of examination before a board, and has received his license, he should be allowed to practice his profession, under some conditions, of course, in any state in this country; he has fulfilled all the requirements. It might be that my health should fail, or yours, or that of a member of your family, and it be necessary for you to move from this climate of Connecticut or of New Jersey to a warmer or more congenial place; then, I say, state lines or rivers should not bar us. I have said that a man desiring to go from Connecticut to California or any other state, should go before his own board; they know him; his neighbors know him and know him well, and they are the ones who should pass on him. You gentlemen of the examining board of Connecticut should know the men here, and know whether they are worthy to receive your certificate of character. Give that to him and let him go to California, or wherever he wants to go, and present to the examining board of that state a certificate from the examining board of Connecticut, and

without any hesitation, without any examination, your applicant should be allowed to practice in that or in any other state. Let us work for that idea, gentlemen, the unification of our laws. Our laws are too diversified today; there are no two laws anywhere just alike. Why should not the same conditions exist in Ohio, New York, New Jersey, and Connecticut? We should have practically the same laws in all states, and then there would be, or there should be, no difficulty in the way of anyone going from one state to another. It seems to me ridiculous that we should be barred by any river, the Hudson or the Connecticut, or any other river, from practicing dentistry. The fact of a man having a certificate from the board of the state in which he lives, and presenting that in the state where he is going to live, should be ample justification for granting him the right to practice dentistry where he wishes.

There are many other things that I should like to speak about at this time, but I particularly wished to look into your eyes once more and say to you that New Jersey would be glad to have you all visit us at our next meeting, and I have the pleasure of extending to you a cordial invitation to be with us at our next meeting in July at Asbury Park.

The next order of business was the President's address.

The vice-president, Dr. Murless, took the chair, and Dr. F. W. BROWN delivered the annual address of the president. (See following page.)

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## PRESIDENT'S ADDRESS.

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By FREDERICK W. BROWN, D.D.S., New Haven.

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*Members of the Connecticut State Dental Association, ladies and gentlemen,*—We meet this morning for the purpose of holding the forty-sixth annual session of the Connecticut State Dental Association. It is not my intention to make any extended remarks at this time, as I believe your time will be more profitably employed in other ways in view of the large program that we have before us. I wish to speak, however, of a few matters that have occurred to me as president during the past year, and offer some suggestions tending toward increasing the membership and interest of our state association.

I think that every previous president will agree with me that when we take into consideration the fact that we have in the state of Connecticut over six hundred licensed dentists, and that in our association we have less than two hundred, it does not speak well for the association. We certainly must have more than two hundred ethical dentists in the state, and I certainly hope that this coming year a strong effort will be made whereby we can increase our membership. I think that in the past, perhaps, we have been a little too conservative. We want more young men in the association, because the young men of today

are to be our officers of tomorrow, and upon the young men rests largely the future prosperity of our organization.

Then, again, the association needs the money that these new members will bring in. One of the first things that confront the president in the preparation of a convention is when the chairman of the clinic committee and also of the essay committee come to him and ask how much money they will be allowed to expend on the meeting, and as a rule the treasury is in such a state that we can allow but a small amount. This year Dr. Bryant, as chairman of the Clinic Committee, came to me and asked how much they would be allowed to spend in securing clinicians for the meeting, and I was obliged to tell him that they would have to confine themselves largely to the dentists of this and the neighboring states, and so an invitation was sent to all the members of our association, only four agreeing to give clinics. We are unfortunate in not having more men come to us from different sections of the country. When we go out of our state for clinicians it means a large expenditure of money, and yet the association should have sufficient money in the treasury, so that we would be able to go to any part of the country and get the best



men we can find to come here and instruct us.

Then, again, we are called upon, as we have been at this meeting, to donate funds from the treasury for this and that object, many of which are worthy of consideration, but with a limited membership and with still more limited funds we do not feel that we can afford to spend a very large amount for these different objects, although I believe that our association should bear its share of these expenses.

Every two years the legislative committee is called upon to employ legal talent in order to draft bills and present them to the legislature, and this alone takes out of the treasury anywhere from one hundred to one hundred and fifty dollars. If we had a larger treasury, I would be in favor of the association taking up the prosecution of dentists in the state who are practicing illegally. What is every man's business is no man's business, and many dentists think that this is the duty of the Dental Commissioners. Let me tell you that they have troubles of their own. As one of the commissioners, I can assure you that they have a great deal of work to do beside the prosecution of illegal practitioners; in fact, they are not a prosecuting board in any sense, but they are always willing to help. I think this work should be done through the state association. We should have a committee for this purpose, large enough to cover the whole area of the state, and we should have men on that committee who would take it upon themselves to look into the qualifications of every dentist who comes into the district, and see if they are entitled to practice. This committee could work through the local societies. This, I think, would

be a means of bringing in new members and strengthening the organization.

Another item I should like to speak of is the dental commission. Up to three years ago the commission was appointed for two years, and a man felt that he could accept the appointment for that time for what honor and glory there was in it. Three years ago, however, a law was passed—and I believe wisely so—that the commissioners should serve for five years. Now, in order to receive the appointment, a dentist must have been in practice for ten or more years, and a man who has been in practice that long has, as a rule, built up a large practice, and it means a great financial loss to him to accept that appointment. Yet we want only the very best men as commissioners, men of strictest integrity, men of good education, etc., and the field is limited—and I want to say, gentlemen, that the work which the commission has done should receive the hearty support of the association. They have to give up from eight to ten days of their time every year; they have to go to Hartford frequently to attend meetings; they have to give up much of their time to study, and I believe it is time for the state association to see, if possible, that they receive some remuneration from the state for their services, the same as they do in other states. I do not think, however, that the remuneration should be so large that it would be an incentive for any man to use political influence to be appointed a member of the commission, but unless the commissioners do receive remuneration, we are going to have hard work to enlist the best dentists to serve out their full time, and I hope that the Legislative Committee will take this into consideration, and that it will receive the

support of every member of the state association.

Some dissatisfaction has been expressed in regard to the way in which the officers of the society are elected. Heretofore it has been the practice to appoint a nominating committee, and this committee reports at a later session and recommends to you the officers for the next year. The suggestion has been offered that we adopt a plan whereby any man could be nominated for office in the society from the floor, which is a question that I leave in your hands to be taken up in due time.

Then, again, I believe that if you elect officers at the annual meeting, they should not take office until the first of June following, allowing the present officers to close the business of the convention—have their books audited in a business-like manner and ready to turn over to the incoming officers.

Another point has been suggested to me. For a number of years the convention was held in Hartford, and there seems to be a strong desire among some of the members that we go back and hold the annual meeting in Hartford every year. Personally, I feel that the association has been strengthened by meeting in different sections of the state, that a number of new men have come into the society who perhaps would not otherwise have become members. That, however, is another point for the association to decide.

In closing, I wish to thank you one and all for the honor you have conferred upon me by electing me as your presiding officer for the past year, and I also wish to thank the secretary and the treasurer and the Board of Censors for their hearty support and co-operation in the fulfilment of the duties of this office.

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### DISCUSSION.

Dr. E. S. GAYLORD, New Haven. I wish to say a word in relation to our president's address, or rather, to add a word of indorsement. It seems self-evident that the suggestion which he makes in regard to the compensation for the board of commissioners is a just one. The president has truthfully said that these men devote much time to this work at a decided loss to themselves, and any move on our part that would be the means of increasing the funds of the society so that we could turn some of our earnings in that direction would be a good one.

In justice to these men, it seems to me that this is a matter that needs no discussion. I think it would be the proper thing to do, and I would be glad to see some move made to that effect at this meeting, by amending our constitution in the regular way so as to cover this point.

Another matter which seems to me self-evident, which requires no discussion, and one which I am glad to indorse, is the changing of our present method of having officers assume their duties immediately after election. There is always

a mix-up, and it must be a disagreeable task for incoming officers to untangle the affairs of the preceding ones. I indorse this, after having served as president, as a motion which should be made.

Dr. O. T. RULE, Meriden. I would like to ask in what respect the constitution should be amended to cover this subject?

Dr. GAYLORD. Simply by making an amendment to our constitution and by-laws. It would necessarily require that this amendment be introduced at one meeting and lie over for future action.

Dr. BROWN. I brought that out because during the coming year a legislative committee is to be appointed to look after legislation, and I would like to see the society recommend that that be put into a bill and be passed by the legislature. What the dental commissioners would like would be to turn over to the state all fees received from candidates, and all bills incurred by the commission, and that the state pay the commissioners a certain fixed sum for each working day. That could only be done by legislation. Any action by the state association would be of no effect.

Dr. G. M. GRISWOLD, Hartford. I wish to indorse all that the president has said. I am glad that he has brought out these points. The importance of enlarging our state association is one that we should consider most seriously. Whenever dental legislation of any sort comes before the legislature for action, the questions that confront us are, "What is the source? Who indorses it?" and when we say "Our state society," then the questions come: "How many dentists are there in the state? How many does your society number?" We are obliged to answer that our society numbers about one-third of the dentists in

the state, and the legislative committee or the governor will reply, "We cannot be dominated by one-third of the dentists in the state of Connecticut." How can we increase our membership and thereby be able to hold the important position of being able to obtain legislation? The suggestions which Dr. Brown has made, in making the election of officers more democratic, trying to get in young members, and trying to get all of them, are worthy of consideration. The suggestion of Dr. Stockton that candidates who pass the board be allowed to come into the society with remission of dues for two years is an excellent one, and I wish some action could be taken upon that at this meeting. It would help us wonderfully. In order to get proper legislation we must take an interest as individuals, as well as members of this society. Whenever a hearing is given before a legislative committee, after a general invitation has been sent to the whole profession of the state, we will have perhaps forty members of the profession present. Gentlemen, we can never accomplish what we wish in the matter of legislation until more personal interest is taken in these matters.

There is an important feature which should be introduced into our state law; that is, to require a preliminary educational standard before candidates are allowed to come before the commission for examination. Many states have already adopted this plan, and it is a matter that we should seriously consider. But in order to accomplish this, or anything else of importance, instead of having half a dozen men take an interest in it, we should all work for it, and if we will unite in our efforts, we can go before the legislative committee and succeed.

As far as remuneration for the com-

mission is concerned, there is no question but that they should receive it, but the moment this is suggested the committee throws it out because there are not enough men interested in the matter to stand by us. They simply refer the matter to the dental commission, saying that it is a selfish matter for the commission to want remuneration, and consequently the issue is set aside.

There is one point which annoys us exceedingly, and that is, that we are subjected to criticism because we do not prosecute illegal practitioners. There is not a single article in the law that permits us as a commission to prosecute an individual for the violation of the dental law. The state society could take that in hand, they could have a committee that would do it, and they would be backed by the commission, and also by the county health officers. Our society should certainly take a more active course in these matters in order to obtain what we desire.

Dr. JAMES McMANUS, Hartford. I have been watching this matter for many years. At the start I thought it was the proper thing that the commissioners should not receive any pay, but they have worked along and have done their duty tolerably well, until now the time has come when their duties are more arduous, when considerable of their time is taken up with the work, and I think that they should receive pay. I think they ought to receive it from the state of Connecticut, and they can get it if the dentists of the state of Connecticut are more united and work together, as they should, for the advancement of this society and for the advancement of the commission. Our society has never had a large membership, and I feel that we members are to blame for it. Not enough

interest has been taken in the society work, neither by the different dentists of the state nor by the members of the society themselves. They do not stay through the meetings; they do not attend the meetings regularly; they do not take a keen interest in the matters that are brought before them through suggestions of the president and different speakers. We have not had unity, which has been our misfortune from the start. Now, there is one thing I claim that we have, and I think I can back up the statement—we have more than that perhaps, but we *do* have personal influence. If the different members of the society would make an effort to see the members of the legislature from their own towns, and labor with these men, as they ought to do, in season and out of season, while the legislature is in session, and even before the men are actually nominated for their positions; if every dentist in every town would constitute himself an active worker, so that the people of the town where he resides would see that he is proud of his profession, that he wishes his profession to be considered of importance, and talk to these men about the work of the profession and what we wish to do, I think it would be but a little time before we should have an influence strong enough so that when a matter is brought before the legislature by the dental commission, they would receive respectful attention, which would insure the passage of any law that they may suggest. It is this personal interest in dental legislation that we as dentists individually should take, and which most of us have not taken, that would be of great benefit to us all. The young men, as well as the older ones, should from now on in a sense become politicians. Generally speaking I do not



like the word politician, but there are times when it is absolutely necessary that people should become a political force and do much as politicians do when they want things—work for them and labor for them unceasingly.

The misfortune of the dental profession has been that dentists have not been in unison. I believe if we had unity of purpose and unity of action, we would have had army and navy bills passed long before this. Some who were at the last meeting of the Northeastern may remember that Senator Bulkeley told us very plainly that if we came before Congress united, we would get what we wanted, and that the whole trouble in the past has been that we have not been united.

This state has done very well, but I think it could do more, and I for one would like to see the commission properly compensated for the work they do. Now that the appointments are for terms of five years we want the best men we can get, and we want them to have the proper compensation for the labor that they perform.

Dr. C. S. STOCKTON, Newark, N. J. Do I understand that there is both a commission and a board of examiners in this state?

The PRESIDENT. No, sir; we call our board the dental commissioners.

Dr. STOCKTON. There is one thing that we have just started in New Jersey that will probably be of help for you gentlemen to know, and which has saved us largely from the retort that the politicians make; namely, that we are a selfish board, working for our own interest, wherefore, as the previous speaker has said, they tell us that they cannot allow one-third of the dentists to dictate to the other portion of the profession. We have

had a law passed in New Jersey in the present legislature in regard to dental clinics, to the effect that any town, or whoever in that town has charge of appropriating the money, can appropriate an amount not exceeding one thousand dollars for the equipment and carrying on of clinics for the poor children. That bill was passed by the legislature and signed by the governor, and we are now in position to take advantage of it. On the fourth of May next our council meets and will appropriate a thousand dollars for this purpose. This provision saves us in a measure from the charge of being selfish, because we are giving services to the poor, who need it more than any other class of people. Most towns have hospitals to which people can go for all ills, where they can have diseases of the eyes, ears, and throat treated free of charge, but there is no place in your town, I venture to say, where the poor can go and have their teeth attended to, and there is no ailment of the human economy so prevalent as that of want of care of the teeth. In New Jersey we have what is probably an advance along that line, and I think this law is going to do a great deal of good.

In regard to the enforcement of the law against people who are incompetent, we have had a good deal of trouble in New Jersey. If a poor colored man goes out and steals a chicken—and probably he cannot help it, as it is a part of his nature to do it—the law takes effect, takes cognizance of that, and he is taken up and tried for a theft; and yet other men are breaking the dental law of the state, which is just as serious as the law against thievery, and no cognizance is taken of it. Why, gentlemen, should anybody be allowed to break the law against the practice of dentistry any more

than the poor colored man who has stolen a chicken? We are compelled to get evidence against these offenders; we have to hire people to go into the dentist's office and get teeth filled and have somebody there to see the work being done and see it being paid for, before we can get a jury to file a bill against the man. That takes money, and in New Jersey we have appropriated five hundred dollars for the examining board to use in prosecuting those practicing dentistry contrary to the law of our state. The state ought to do that, and it should be a part of the duty of the prosecutor in the county where the violation takes place to obtain evidence and prosecute the offenders, and it is only by working together that we can accomplish this. Only a few days ago I met one of the men connected with the Prudential Insurance Company located in our city, and he spoke of a case being tried out in which they were to decide what to do with a surplus that had accumulated in the company, whether it belonged to the policy holders or to the stockholders. That case is being tried by the ablest counsel that each side can employ, and I said to this man that I had supposed that this was a friendly suit. He replied, "So you would think if you went down to the trial room and saw these lawyers hobnobbing together. There does not appear to be any dispute at all, as they are all good friends." Gentlemen, if we can only imitate what lawyers are doing, stick together, stand together, and work together, we will accomplish more than we have been able to accomplish in the past.

Dr. A. J. FLANAGAN, Springfield, Mass. I desire to ask for some information. The question has been raised as to the prosecution of illegal practitioners, not

only in this state, but in New Jersey, by the board of dental examiners, and I should like to ask if you have any medical examining board and what the prerogatives of that board are, and what influence they have outside of the prerogatives that go with their office? I should like also to ask what is the system of prosecuting illegal practitioners in law and medicine?

Dr. GRISWOLD. In accordance with our present law, we as a commission are principally an examining board, and the only men who have the right to prosecute are the county health officers. We as a commission, you as individuals, can report any case of violation in your county, and it is the duty of these officers to take it up. I must say in defense of the commission that at the present time we have no knowledge of anyone violating the law who is not already under prosecution. A case is now pending in New London in which the defendant was convicted in the court of common pleas, and appealed to the supreme court; that appeal is still pending. This is the only case we have knowledge of as a commission that has not as yet been dealt with. If individuals have knowledge of a case of violation of the law, it is their duty to report it to the county health officers or to the commission, but the commission is under no more obligation to report these cases than is an individual. It is often, however, the fear that he will be called upon to testify that prevents the individual from reporting a case, and frequently he stands back and criticizes the commission, when he should criticize himself for not reporting the case.

Dr. FLANAGAN. I should like to find out what the medical and law boards

would do in a case of violation of the law in the state, and also, if the medical and law boards themselves prosecute these cases.

DR. GRISWOLD. I cannot answer that, but I have the impression that the law board does not, and that the medical board does.

DR. FLANAGAN. I think that if it be true that the medical board of the state of Connecticut has a recompense, the dental board also has that right—if not in any other, surely in a political sense.

DR. STOCKTON, in his concise, intelligent, and practical way has made many points today. Dr. Stockton has rendered valuable service for years and has accomplished results for dentistry, and for other branches also, and I was delighted to hear him today bring out certain points. The doctor has asked a question, and I shall try to state, from an experience of some twenty years, what my opinion is with regard to that question. He asks what are we going to do about it, why we do not do this or that? For some twenty years I have been associated with dental society work, and for some fifteen years with that which may come under the head of prosecuting work, and the whole question is this: If you go back in the history of dentistry, medicine, law, or any organized body of men and read the literature, you will find that exactly the same conditions confronted these bodies fifty years ago as are confronting them today. It may be possible that your ratio of indifference and work is either smaller or greater, but the fact remains in dentistry, in law, and in medicine that the condition which existed then exists now. If a state has a membership of six hundred dentists, and you have thirty per

cent. organized in that commonwealth, you have a better working-body than have the rest without any organization, and an intelligent body of organized men claiming thirty per cent. of the profession can surely do greater work than the unorganized seventy per cent. If the medical board of this state receives recompense, dentistry can approach the legislature, not from the standpoint of selfish interest—because all law fundamentally comes from the standpoint of justice; it acts, and must act, for the protection of the public, and incidentally the profession gains because of the protection of the public—but dentistry, the same as medicine, the same as law, the same as the ministry, has the right to demand certain enactments in legislature for the protection of the public; and when your committees approach the legislature, let it be understood that that is the primary motive, and back it up by statistics. If the medical board receives recompense, and if dentistry is a part of the healing art, why then have we not the right to demand equal conditions, if we exercise that right as a part of the healing art. This, gentlemen, is going to require intelligent action, political influence, political work, and when we dentists have arrived at that stage where we recognize the political conditions controlling the commonwealth, and seek to improve our conditions along the lines of justice, yet along lines perhaps of political influence, we will accomplish that which we have so long wished for.

Lastly, let me say a word in defense of the young man. I am not so old, perhaps, as many present, but I have been engaged in the practice of dentistry for twenty years, and in each and every city in this commonwealth, as in others,

there is a certain number of men who have an overflow of practice, and I wonder how many of these men ever be-thought themselves of the duty they owe their patients to guide that overflow into the proper channels of dental service. If we have such practitioners and have young men who are members of recognized dental organizations, ethical, honest, capable, educated, or maybe even cultured, it is the duty of each man who has that overflow to guide it to where it will receive that attention which he so much desires it to have. That is a point in which we are weak. The young man who receives an occasional patient from such a source may not be a member of a society at the time, but he begins to think that it would be worth something to belong to it, and that he is being profited when he receives a patient in the proper way.

Another thing. Many men come into the society and no attention is paid to their work. To be sure we cannot pay attention to all, but occasionally a young man comes along who has it in him to be a good president, to serve on committees, and then I think the young man should receive reward in recognition of that which he gives. The only way in which we shall ever make any advancement—and, gentlemen, we are advancing today, in my opinion—is to remember that when a man comes into a calling, and expects to get reward without returning payment for what he gets, when he expects to get something of a worldly nature without work, then you have a condition which it requires, I am afraid, the millenium to overcome, and the millenium in dentistry is no nearer than it is in other callings in life. But organized effort and intelligent

agitation can do as much for dentistry as it has for other walks in life.

Dr. G. A. MILLS, New York, N. Y. The gentlemen who have spoken have made some pertinent remarks based upon a solid foundation. I remember reading in the *Cosmopolitan* some time ago some remarks made by Mr. Lewis at an after-dinner talk, in which he asked the question, "What is the cause of all these revolutions in organized bodies?" His answer was, "The wolf in man." Gentlemen, human nature has been the same ever since Satan came. I am both optimistic and pessimistic in regard to dentistry. The last speaker has just said that the same difficulties exist in all organized bodies, even in the church, and there is a cause for all that. I think one of the speakers last night hit the point when he said that the great hope of dentistry is the training of the minds of the intelligent public, which will bring it nearer to the common truth, away from preconceived notions. This underlies the foundation of our calling. We have been called a partially cultured profession, and my thought has been, as I look back now in my closing years—and I am doing a great deal of thinking along the lines of the hopefulness of the future of dentistry—that although we will never get away from human nature, there is an opportunity and hope for improvement along certain lines. I have great faith in the nobleness of character of the dental profession. I do not believe that there is any class of men superior to ourselves in purpose. We hold a peculiar position before the world today, and we claim recognition not only from the medical profession but from the public. The strongest thought to my mind is based upon this, a larger and



more intelligent education of the public. That has been the one question we have been agitating in our societies for years, but the great difficulty is to get rid of the personality as to all these things. Good is being accomplished today by men of influence, and I expect very soon to hear of a very bright paper from Dr. Williams of London, bearing on the question of the bureau of publicity. He will give us some facts on that subject that will be of valuable influence in the betterment of conditions in the future in the method of educating the public. What we want to be careful about is to educate them in the right direction. They are being most wonderfully educated today in the wrong direction. I think that, of all things, indifference to legislation has brought about a condition which is obstructive to the progress of dentistry in the minds of the people. But this is true in all conditions of society; it is so in politics, in the church. In all organizations there is a certain amount of indifference, and I hold the view that what the public really needs is a larger outlook on broader educa-

tional lines, and I believe the time is coming when we are going to do something to educate the public through the public press. We will do this in the way of introducing educational articles of a literary character, not trying to give the impression to the public that the man who has written the article is the greatest man in the world. This work of enlightenment must be done impersonally, by some men connected with societies who are able to publish articles of that kind so as to approach the public in an intelligent way, entirely upon broad principles which will work practical results in dentistry.

This may be an inspiration, and I may not live to see it, but with all sincerity I may say that I have great hope for the heart of the profession when I meet men, as I do here, of nobility of character and honesty of purpose. The great point is that we must work in unity and be willing to lay down private interests.

The meeting was then adjourned until the afternoon session at 2 o'clock.

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### **TUESDAY—Afternoon Session.**

The meeting was called to order Tuesday afternoon at 2 o'clock by the president, Dr. Brown.

The first order of business was a lec-

ture by Dr. W. A. PRICE, Cleveland, Ohio, on "Some Advantages of the Stone Model Method in Making Gold and Porcelain Restorations." (See following page.)

## SOME ADVANTAGES OF THE STONE MODEL METHOD IN MAKING GOLD AND PORCELAIN RESTORATIONS.

By W. A. PRICE, D.D.S., Cleveland, Ohio.

WITHOUT spending much time on a preamble, I would ask the privilege of having an informal heart-to-heart talk with you, and wish you to ask any questions you desire, as that will help me to cover more accurately the consecutive points necessary for a general understanding of the work.

### CONDITIONS CONTROLLING FILLING OPERATIONS.

I would ask you to consider first the general conditions that control our operations. We are living in the twentieth century; the dentists of the past decades have set a standard for us that forces us to strain every nerve and effort to maintain that standard, even without introducing new methods. Let us consider first these standards that we have received from the profession of the past as ideals for dental operations. When we attempt the restoration of cavities by gold inlays, we must uphold as standards the margins and contours that we have seen in probably hundreds of magnificent gold fillings malleted into place, ten, twenty, thirty, and forty years ago, and

we must insist on margins as perfect as these for our gold inlays.

### INTERPROXIMAL SPACES AND CONTOURS.

We have studied the interproximal spaces and have learned to recognize that a thorough restoration depends almost as much on the relationship of the teeth as on the way in which a filling fits the cavity. We must therefore emphasize contours, and must have as our ideals anatomical interproximal spaces. For that we have again to consider those beautiful malleted fillings, for they have set the highest ideal of any we have had, and in judging any specimens of inlay work, I am going to insist for myself that it comes up to those standards of margins and contours that have been furnished by the best samples of malleted gold fillings.

### OBSTACLES IN THE FIELD OF OPERATION.

Another fixed condition that we want to study for a moment is the field of operation. You will all agree with me that fillings that stand as monuments to

the skill of our splendid operating of the past have not always been monuments to the professional judgment of the men who inserted them, considering the strength of the patients who had to endure the insertion of such fillings. That is another standard for ideals, and we will insist on an operation that will be more comfortable for the patient, and as much more comfortable as possible than was the insertion of those large contour malleted gold fillings. I believe one of the very worthy considerations in judging the merits of any operation will be the patient's actual suffering, and also the strain on the operator, or even the inconvenience to both during the time of the insertion of a filling.

The field of operation presents very serious limitations to us. We have learned to work in that very constricted territory, the oral cavity, with the cheek and tongue in the way, with the saliva around—and perhaps bloody saliva—so that we cannot see very well unless we put the rubber dam in position. So that is another fixed condition which we will try to modify, by removing as much of our operation as possible to a more desirable field to work in, which will be in our hands, on the table, in the laboratory, or at the bench, so as to perform, if possible, a part of the operation under more ideal conditions, always provided that the final efficiency of the operation be not sacrificed.

#### CONTRACTION AND EXPANSION OF METALS.

There are other fixed conditions that control very largely the success of our work, one of these being the law that controls the behavior of the metals we are working with. The profession as

a whole has uncritically been taking for granted the physical processes governing the melting and cooling of gold; they are making no allowance or very little for the normal contraction that invariably takes place in gold.

There have been three distinct teachings with regard to the contraction of gold. One has been that gold does not contract if properly treated; and if it does, the contraction is so little that we may ignore it. Another is that we can prevent the contraction by a certain manipulation, which would be the chilling of the gold very quickly after casting; in other words, casting into an almost cool investment. Another has been that gold does contract a definite amount no matter when, how, or by whom it is manipulated, and that this total contraction will take place under all conditions, though its exact position may be changed in part; that is, as the mass of gold making up an inlay and sprue is cooling, the gold may be moved from the sprue to take up some of the total of the contracted gold in the inlay. In other words, it is entirely a question of position or location of the contraction that has been changed, not the total contraction, but the location of the contraction. It is very necessary for us to have something definite in our minds relative to that contraction. If, for example, gold does contract, and if we can and do not control it, making our inlays to fit a definite cavity without making allowance for that contraction, we cannot make such margins as we have taken for our ideals. It therefore becomes imperative for us to decide whether or not gold does contract, and if it does, then to make plans to provide in some way for the correction and control of that contraction. In my mind it is a fixed law

and as definite a fact that gold does contract about one-fiftieth of its diameter from the crystallizing point, as is the law of gravity. No information has been published yet as to the behavior of gold as it changes its state from the liquid to the solid, though from experiments which I have made and am making, the indications are that considerable change in volume occurs then. If we cast into a piece of fused quartz, which is a substance with only about one-fortieth of the expansion and contraction of gold, the fused gold will contract normally by the simple weight of its own mass, and there will be a total contraction of over one-fiftieth of its length. The hydrostatic pressure would be sufficient to control the spheroidal tendency of the gold, for it would be at the base about  $\frac{3}{14}$  of a pound. If we were casting a bridge one inch long under these conditions, it would be over one-fiftieth of an inch shorter than the mold into which the gold was run. If, however, we will repeat that cast and have a definite and sufficient pressure on the gold at the time of cooling, we will in a measure control, not the total contraction, but the location of the contraction by forcing gold down through the sprue. We thus make our contraction take place in the sprue as much as possible, instead of having it normally distributed in the inlay and sprue. For this the investment must be hot, and the sprue gate large.

#### METHODS OF CONTROLLING THE CONTRACTION OF GOLD.

I do not think it necessary for me to give scientific reasons at this time for the contraction of gold, and we shall take it for granted that gold does contract. I shall now discuss the methods of controlling that contraction. It seems to

be a fixed fact that the location of contraction can be controlled up to a certain point nearly, in proportion to the pressure that is applied on the sprue. To be exact, if we apply a pressure of twenty-four ounces on a cross section of a sprue one-eighth of an inch square or of any globule of molten gold, it will move the gold for nearly two hundred degrees below the melting-point, which would be equivalent to an air-pressure in a casting machine of approximately one hundred and twenty pounds per square inch. If we use only two ounces, the actual pressure on that globule of gold would only move the gold for some thirty degrees below the melting-point, which would be equivalent to something like sixteen pounds per square inch—which means that the gold is contracting from the time it commences to crystallize, contracting all the time down to normal temperature at the rate of about one one-thousandth of an inch for every one hundred degrees F. in temperature. Or if in any piece contracting about one one-thousandth of its diameter for every hundred degrees F. that it cools, we only control it for two or three hundred degrees below that point, then we have nearly twenty thousandths uncontrolled. Therefore, if we are to control the contraction to a considerable degree by pressure, we must use higher pressures than are obtained in any of the small casting machines. It is possible with such a machine as I use to obtain an equivalent of as much as from three to six hundred pounds of air-pressure in casting, which, however, ordinary investments will not stand.

There are three other ways of preventing a gold inlay from being too small, viz. to prevent the contraction of the metal itself (as yet not possible), or to



expand the form into which it is cast by either enlarging the pattern or the mold made from it. If we take an investing material of any of the standard formulæ and heat it, it will expand at a maximum six to eight thousandths of its dimension at a temperature of 1000° F. Therefore, if we carry out the proper manipulation, we can only hope that an ordinary investment will expand from six to eight thousandths of its diameter, leaving with ordinary low-pressure machines an uncontrolled contraction of the gold of from twelve to fourteen thousandths. The wax of which patterns or impressions are made is subject to great changes, due to treatment and temperature. If we are undertaking to make butt margins around the inlay, we will find a space even of hundredths of an inch, which is wide enough to permit perhaps twenty teams of bacteria to go in abreast. If we undertake to make a joint with that procedure, we will have a joint to be filled with cement, which, after the cement has been washed out, will provide an inviting place for bacteria.

It is not possible for us to control entirely the contraction that will take place in the gold, but we can control it in a large measure. If we use high pressure on ordinary investment materials, what happens? We find that twenty pounds of pressure from the air-machine will distort very considerably a plaster and silica mixture of one to three or one to four, so that the inlay will not go to place in the cavity. This is due to the yielding of the investing material under the pressure.

#### INVESTMENT MATERIALS.

This suggests another ideal, viz, to have an investment which is hard enough

to withstand any pressure you desire to use, without yielding at the cavity surfaces. One of the first requisites and one of the greatest advantages of a hard model, whether it be stone or whatever you may have to cast into, is that the surfaces reproducing the cavity will not yield under any pressure that we may apply in casting.

#### CAVITY PREPARATION.

Another very important phase in this work is the preparation of the cavities so as to allow us to take care of the other fixed conditions—or our inability to do two things: To control the contraction of the gold, and to put into position a block that will fit within a thousandth of an inch at all margins, if it were possible for us to make it within that proximity. It is mechanically impossible to withdraw and insert in position anything that fits as tightly as that block would, because of the necessary roughness that would occur on the surfaces. Take, for example, a glass-stoppered bottle not tapered, and try to pull that stopper from the bottle if it fits as tightly as we would want an inlay to fit if we depended on the mechanical reproduction of the margins by so exact a casting. We could not unseat an inlay if it were once in place, and we could not remove the impression, if we had the cavity so prepared, without a distortion of a few thousandths of an inch.

I believe it to be a physical impossibility to make margins with butt joints that would compare with the gold fillings that we have taken for our standard. Therefore the only way left for us to overcome this difficulty is by the preparation of the cavities. It is an axiom with me—and I believe it will be as fixed an axiom in the preparation of cavities

for inlay work as is extension for prevention in the preparation for gold malleted fillings—that every margin of every surface of every cavity must be beveled, the reason being that by the burnishing of a bevel of pure gold we overcome or correct the marginal errors. It is not possible for us to spin or burnish gold up to a flat, square, open butt joint without making a depression in the surface. If, then, we have made our joint by burnishing a flap, so to speak, we must have our cavity so prepared that the burnishing will not interfere with the contours of the bevel when the operation is completed. The cervical margin should always be prepared with a bevel. A thin feather-edge margin, as we have learned, has no strength, and offers an inviting place for bacteria when opened up. The margin must invariably be chisel-shaped. With these precautions of cavity preparation and a hard model to cast directly into, and with an inlay material that can be burnished to allow of the closure of the margins, it is possible to make a restoration that in every particular will fulfil our standards, namely, margins as perfectly finished and adapted to the tooth, without a visible cement line at the edge, as our best malleted gold fillings, and contours that will not only be as good but will be very much better, because of the better conditions under which they are made, and which allow us to produce an ideal anatomical interproximal space.

#### THE MAKING OF AN INLAY FOR AN OCCLUSAL CAVITY IN MOLARS.

The simplest kind of cavity that we have to fill is an occlusal cavity in the molars, where there is no contour to re-

store, and where the contact points and both buccal and lingual walls are in position. The simplest form of tray that can be used for taking an impression of such a cavity is the finger. An impression material should be used that will reproduce the tooth perfectly. The impression material is shaped into a cone, the base of which is heated slightly so that it will stick to the finger. The tip of the cone is then heated, and the cone is put into the mouth and pressed to place in the prepared occlusal cavity. The cavity surfaces and the tooth surface beyond the cavity surface—which are required in order that in making contours we may carry out the lines of the tooth—are thus readily reproduced. This is the simplest form of restoration, and in so simple a cavity, if the point of contact with the approximating tooth is normal, the whole operation can be made readily in ten minutes by fusing the pure gold directly into the stone model. (I will show in my clinic that this restoration can be made easily in that time, even with the inconveniences involved in a clinic.) The embarrassing part in practice will be that the operator can present to his patient the finished inlay too quickly to be able to charge a proper fee. In practice, therefore, I take the impression of the tooth, and perhaps that of one or two others, dismiss the patient, and make the inlays in the meantime, and I find that patients will pay a good fee without thinking that I am being overpaid. Still another advantage is that an assistant can make the inlay as well, perhaps, as can the operator. The filling is polished on the stone model, except the finishing of the margins, which is done after burnishing-in the soft cement in the cavity.

## DIRECT VS. INDIRECT METHODS.

I should probably at this time speak more in detail of the stone model and how it is made. I am speaking this afternoon for model methods in general, and I would rather have dentists use fusible metal, sulfur, or amalgam for their models, and make the extra two steps in taking the impression and making the pattern in order to obtain more perfect contours and margins, than to have them work by the direct method, because I believe that they will get better results. By using the hard model, into which one can cast directly, two of these steps are saved, besides other advantages. The mixing of the stone is very simple. Any dentist has had practice enough in making silicate fillings to know how to manipulate that material. The stone is essentially a silicate cement, and has the additional properties that it will tolerate high temperatures without contraction and that it becomes very hard on being heated.

It would perhaps be well to trace for just a moment the steps taken and the errors introduced in the different methods. If the direct method is used, when the pattern is made directly in the cavity with wax and removed, the cavity surfaces are removed one step from the cavity. When the pattern is invested and the wax is melted out, the cavity surfaces have been removed two steps; by casting directly into the investment the cavity surfaces have been removed three steps from the original; when the fusible metal, sulfur, or amalgam model methods are used, when the impression is taken, one step is made; when that impression is placed into the modeling material, two steps are made; when an impression is made from that by making

a wax pattern in the cavity, three steps; when the wax pattern is invested in the plaster and silica, four steps; and when the pattern is reproduced in gold, five steps. Yet it is better to take these five steps, if a better result can be obtained by so doing, especially in complicated cavities.

## THE ARTIFICIAL STONE METHOD.

With the hard model or artificial stone method, the impression is removed from the cavity by one step; the stone model made of that impression, two steps, and the direct casting into that model, three steps, just the same as with the direct wax method. The advantages are, then, not that the steps are shortened as compared with the direct method, but that all the cavity surfaces and also the tooth surface are carried beyond the field of operation, so that, in finishing, the contours can be shaped up normally according to the ideal, the gold is being held in a solid body while the margins are being polished, and the hard surfaces of the cavity in the stone model make it possible to use as high pressure as desired.

All adjoining parts can be removed or replaced at will. Take, for example, a distal cavity in a lower second molar, where the saliva interferes and where one margin lies below the gingival line. By taking the impression the gingival tissue can be pushed down temporarily, and the margin exposed and reproduced very accurately. The third molar, after it has been reproduced on the model, can then be removed by fracturing the model, the reproduced gingival tissue can be cut down and the cavity exposed perfectly. By putting the third molar back on the model the required contact point

can be clearly noted, and no gingival tissue hinders the operator in making the contours.

#### TAKING IMPRESSIONS.

There have probably been few drawbacks to the inlay method that have been greater than the distortions caused from taking impressions of surfaces that are lying below an overhanging contact point. When the impression material is withdrawn from the space, the impression immediately below the contact point changes shape and is distorted at this point. If we use a tray with a septum passing down between the teeth and beyond the contact point, slowly pressing down the tissue, we not only carry the tissue down out of the way, but when the impression is withdrawn we shall have the contact point required, and the septum prevents distortion of the cervical margin of the cavity.

The first requisite for taking an impression for any method is a wax that will spread out thoroughly over the point. Another will be to have the cavity margins all beveled, so that a record of that bevel is carried away with the impression. If the cavity is prepared in that manner, and a tray of the kind referred to is employed in taking the impression, on withdrawal the cervical margin will be found undistorted. In restorations of approximal cavities, it is frequently found that at the cervical margin the butt joint is an open joint, and the inlay will not go down to place, partly owing to the contraction of the gold, partly to the distortion of the investment under the pressure used for casting. We are not able to close such cervical margins, and of all margins of a cavity none is so important. The thin vulco-carbon separating disks are very

convenient for preparing the approximal and cervical margins. If the cavity is prepared with a chisel-shaped bevel at the gingival margin, the inlay can be burnished and finished and that joint closed as beautifully as in the most perfect malleted filling, provided the margin is pure gold.

One danger must be emphasized just at this point. If in making the restoration the contour has carelessly been carried too far below the gingival floor, a most embarrassing overhanging margin will result, extending into the tissue, which is possibly worse than an open butt joint. To avoid this, we make a record at the time when the impression is taken as to how far the bevel goes below that point.

#### THE INTERPROXIMAL SPACES.

Returning to the question of interproximal spaces, two or three important points demand consideration in reproducing an anatomically exact interproximal space. When a cavity is present in the distal surface of the second molar, the third molar is generally found tipping forward into the cavity, as the contact point is lost from the second molar, and it is almost invariably necessary, if the interproximal space is to be reproduced, to procure a little separation so as to hold the third molar in a more perfect relation. Some operators reproduce the contact point by the direct method of flowing a little extra gold at that point, and polishing this off to fit, but that is simply guesswork. A more exact method is to remove a definite amount from the reproduced contact point of the adjoining tooth and carve the wax so as to reproduce a correct interproximal space. The teeth are separated with temporary stopping.



The requisite next in importance in producing such ideals as we have set as our standards is that the material of which the inlay is made be pliable, in order that we may burnish and close the margins perfectly. Second, we must close the margin with a slow-setting cement while the cement is soft. I cannot conceive of our ideal being attained unless these two points be observed. Therefore pure gold for margins will be found very much superior to alloys, which are harder and cannot be burnished closely. A slow-setting cement will prove to be of greater value for setting inlays than the more quickly setting cements, which harden too quickly to allow of finishing completely all margins close to the tooth before the cement is too hard.

The next class of cavities that we will consider is that in teeth in which two adjoining contact points are gone. That involves a new difficulty, because we cannot polish off a portion of the adjoining contact point. We accomplish our result as follows: We may break the model apart and put the fractured pieces together again with exactness, and make the wax patterns touch each other in that position. We have not yet allowed for any additional wax for the separation we are to get in the case. We can do this by adding wax and trying the models together. It will be found of very great advantage in such cavities to use an instrument that makes it possible to carry the two pieces of the model, after it has been fractured, directly away from each other in a parallel position, thus procuring any desired amount of separation. We accomplish that with this instrument, which is called the micrometer articulator. [The essayist here demon-

strated and described the use of the instrument.]

If a series of three, four, five, or even six contact points are to be restored at once, it is done by means of that instrument so exactly that when the inlays are put into position, probably only one or two of the contact points will have to be polished off, and the occlusion is so exact that when the patient bites into the wax it will prove to be almost normal. I have no hesitation in restoring several points at once, as it can be done with exactness, provided always that the position of the teeth permits.

The next class of cavity we shall discuss is that involving two contact points on the same tooth, which will require a double tray, or one having two septa. A tray with septa of suitable length is selected, and with this an impression can be taken with great exactness of a root to be crowned or of a bicuspid or molar in which the occlusal and both the mesial and distal surfaces are to be restored by an inlay. The third molar, for example, will be taken with a box tray. The hard model holds the gold, preventing any mesio-distal shortening from contraction, which is a point of exceedingly great value.

#### STEPS IN CAVITY PREPARATION.

The weakest point in most of our gold inlays, if we use pure gold, lies in the step form of cavity preparation in bicuspids and molars. I wish to say in this relation that the inlay method involves no more and probably less destruction of tooth structure than does the insertion of malleted fillings, provided the malleted fillings are made with the idea of extension for prevention, for the reason

that the gold can be applied in a thinner mass than in the malleted gold, and yet have strength. For the reinforcement of the step it is of great advantage to use an iridio-platinum bar, which tends to make the attachment of the gold very strong. This bar is laid into the stone model cavity before waxing up, and then the gold is cast directly around that bar, which allows a support analogous to that of reinforced concrete. The end of the iridio-platinum bar is allowed to extend beyond the tooth into the investing material.

#### INVESTING THE STONE MODEL.

It has just occurred to me that possibly I have not made it clear that the stone model becomes a part of the investment. After waxing up the cavity in the stone model, the spruc is attached firmly to it, and the stone model, wax filling, and all are put into the investing material, and after melting out the wax the inlay is cast in the usual way. Distortions on the occlusal surfaces may be produced by the pressure on the investing material, just as with the old methods, but no distortions of the cavity surfaces, which are the essential surfaces, will occur, these being in stone. The little tip of iridio-platinum bar extends into the investing material, which holds it in position while the wax is being melted out.

#### INLAYS IN BICUSPIDS.

The preparation of cavities in bicuspid involving a contact point on the mesial or distal surface often makes it necessary to encroach upon the attachment of a good filling already in place, in order to secure a strong attachment.

The ideal attachment would be to take both fillings out and make the cavity continuous from mesial to distal, but that is not necessary. If a groove and post-hole are cut, and a bent iridio-platinum bar, which comes away with the impression and is transferred to the model, is put in, waxed, and cast around, an attachment is obtained that strengthens both fillings. This is well illustrated in making an anchorage for a lower canine in which a large portion of the wall is gone. By this method of using the bar an anchorage can be secured without encroaching upon tissue that is of great value.

#### INLAYS IN CANINES AND INCISORS.

Probably no cavity makes greater esthetic demands upon the operator or presents greater difficulties in taking impressions than cavities in incisors and canines. There is no operation that to me is so satisfactory as a gold inlay in an anterior tooth inserted from the lingual surface. This is a very difficult operation, but it becomes relatively easy by the following procedure: The tooth is prepared from the lingual surface, and the impression is taken by the use of a septum tray, which is allowed to pass between the teeth. The impression material is put on the tray and the tray is inserted from the lingual surface. A sharp lancet or knife is used to scrape off the wax from the septum as it passes between the teeth, and also to expose very carefully the labial margins of the cavity, so that they will be reproduced in the second part of the impression. After chilling with cold water, a second mass of wax is placed against the teeth and the protruding septum from the labial surface, giving a record of the

labial surface and the labial margin of the cavity. After chilling, the labial piece is removed first, then the lingual, then the two are put together, and a compound impression is obtained, so exact that when the model is made, the fillings will delight the operator if he has prepared the cavity so that the impression can be withdrawn properly. The greatest difficulty is the proper preparation of the gingival margin, the bevel of which must be carried far enough labially for the impression material to be withdrawn without distortion from the entire approximal gingival margin.

One may well ask how it is possible to make a bevel on the labial surface margin, and have it extend in such a way as to lock the filling. A filling made for that cavity according to this method will not go into place with the bevel on the labial margin as cast, until with some instrument the labial bevel is bent back sufficiently for it to pass through. When that is done, one can pass it through and by burnishing the joint can be closed. With that simple procedure, that bevel of pure gold can be turned away from the margin so as to allow the inlay to go into position, and while the cement is soft the inlay may be burnished to the cavity surfaces, and the joint be closed very perfectly, and polished like a malleted filling.

#### METHOD OF MODIFYING THE CONTRACTION OF GOLD.

I would say a few words on the modification of the contraction of the gold. The ideal filling material for casting would be one that would be as pliable as gold, and even stronger, and one that would not contract as much as gold. If we could modify the gold formula so

as to control the contraction, it would be more valuable to us as a filling material. I do not mention this because I have succeeded, but because I want you to succeed in finding such a material. We have in Invar a metal which does not contract or expand at the low ranges of temperature, but this is not a material which we can use for inlays. If, by adding some other metals to gold, we can produce a material that will have neither expansion nor contraction, this new alloy will be that much more valuable to us than gold. I have only to report in this connection that the addition of a little aluminum, two-tenths of one per cent., will increase the range through which the alloy will be moved by pressure several fold. This has an advantage in those cavities which are compound from mesial to distal through the occlusal. The great difficulty in filling that class of cavity consists in that the staple or horse-shoe will not go down over the tooth, and after the inlay is made it is found that it will not go to place without forcing, and the inlay on forcing simply spreads out in a V shape at the bottom. If two-tenths of one per cent. of aluminum be added, with high pressure, the total contraction can be controlled in a large measure, and if cast into a hard investment material the gold will be held so that it cannot contract. I have in my hand two rings which were cast at the same time and with the same pressure. They are reproductions of wax models that were rings of wax that passed over a tapered column of brass, and of as nearly the same size as could be made, yet one will drop over the column and the other will not go within half an inch of the bottom. One ring was cast with stone for the center, which kept it from contracting, and for the other ordinary investing

material was used, the contraction of the gold compressing the investing material, therefore making the ring smaller. In inlays for the class of compound cavities referred to, the hard material will hold the gold so that it will not contract to so great an extent, if at all. In casting a base for a crown, a great advantage is also offered by using such a hard investment for the base. Many operators have cast a base for a crown, with a solid band cast for the root, and have found that it would not fit, because the contraction is so great that it will crush the investing material. If gold and platinum are used for a very heavy base, the contracting strain will be so great that even the stone is crushed, which is also true of eighteen-karat gold. A moderately sized mass of pure gold cast around that stone will not crush it, which fact suggests that we use as soft a gold as will be strong enough for casting the bases for our crowns, in order that our stone may hold it.

The effect of adding a little more aluminum to the gold is interesting and perhaps surprising. It is not desirable to use in dental work more than two-tenths of one per cent. of aluminum. If, however, ten parts of aluminum are added to ninety parts of gold, the melting-point of this alloy is lower than that of pure aluminum, also lower than that

of an alloy of five parts of gold in ninety-five parts of aluminum. If two parts of aluminum and one part of gold are heated together for a long time, they will form an alloy which, though brittle and very untractable and unmoldable, has a melting-point higher than that of gold. I would not say that any union takes place between these metals, but the resultant alloy seems to represent both a chemical and a physical union, and has properties and a melting-point entirely out of proportion to the physical properties of the metals individually. It is a difficult alloy to form, and seems to have the formula  $AuAl_2$ .

#### RESTORATION OF INCISAL ANGLES.

I have not spoken of the details of making a restoration of incisal angles with compound fillings of gold and porcelain. Few operations can be so successfully accomplished as the restoration of these angles by casting a window-faced gold and platinum inlay and fusing porcelain into that, or better, cementing the porcelain, giving the esthetic effect of an all-porcelain inlay and the strength of a gold and platinum inlay.

I wish to thank you for your attention. I have been as brief as it seemed possible in the presentation of this subject.

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#### DISCUSSION.

Dr. G. B. PALMER, New York. I am very glad of the opportunity to say a word of this method of Dr. Price's, for I have been using it now since Novem-

ber and have been very successful with it. I saw him in Brooklyn last fall, when I extended to him an invitation to present his work before this meeting



of our society. I had some trouble at first in working that method, but Dr. Price kindly helped me over my difficulties, and since that time I have given up the idea of the direct method, and have had only two failures since. I have made a great many inlays after his plan, and find it of great advantage in very many cases, notably when we wish to anchor a post. There are very many cases in which we have occasion to put a band over the occlusal surface, with a post in the root-canal. By this method the post is fitted into the cavity, an impression in wax is taken and withdrawn and the stone model is made. The band and pin remain on the model in the exact position in which they are removed from the cavity, and the gold is cast directly around that. This process is always successful—the inlay will readily go into the cavity, and the post will take its proper position.

Another very important feature is the restoring of contact points. The model can be broken; if, for instance, a cavity involves the mesial, distal, and occlusal surfaces, the inlay can be waxed directly to the model and cast so accurately that it fits within a thousandth of an inch every time. The inlay can be finished and polished so that when it is set into the cavity, no further work on it will be needed. The adoption of this method will surely be found very satisfactory.

Dr. JAMES McMANUS, on behalf of the members of the society, presented the president, Dr. Brown, with a gavel to be used in the conduct of the society proceedings, and as a memento of his tenure of office as president.

The meeting then adjourned until the evening session at 8 o'clock.

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### TUESDAY—Evening Session.

The session was called to order Tuesday evening at 8 o'clock by the president, Dr. Brown.

The first order of business for the evening session was the reading of a

paper by Dr. THOMAS E. WEEKS, Philadelphia, Pa., entitled "The Care of the Teeth of Children: Our Duty to the Men and Women of the Future." (See following page.)

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# THE CARE OF THE TEETH OF CHILDREN: OUR DUTY TO THE MEN AND WOMEN OF THE FUTURE.

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By THOMAS E. WEEKS, D.D.S.,

PROFESSOR OF CLINICAL DENTISTRY, PHILADELPHIA DENTAL COLLEGE.

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God in his wisdom imposed the law that every individual owes something to his fellows; ethics is based upon this law, and man suffers from disobedience. In assuming some callings in life man increases his obligations. He who essays to minister to the mental, spiritual, or physical well-being of his fellows enters this class and assumes the added obligations.

## THE DENTIST'S DUTY.

We as dentists undertake to minister to one kind of physical ills, and if we wish to maintain the position that our calling is a branch of the healing art, we must be ready and willing to discharge the obligations of the physician. In the very nature of things the physician must be a teacher as well as a healer.

Having been born as a profession not so long ago, we undertook the care of the mouth and teeth; at least, I am convinced that the great and good men who founded our profession intended that as the scope of dentistry. Scan the history of dentistry and answer as to how nearly we have fulfilled these intentions. We

believe that we are growing ever nearer to this ideal, so we will pass over our omissions, remembering them only as they may help us to improve.

## ENLIGHTENMENT OF THE PUBLIC.

Assuming that the dentist is competent to advise and direct those who seek his aid, and is able to treat the lesions of the mouth and teeth, he finds himself in the midst of a collection of individuals of whom only one-fifth or less ever employ the services of a dentist. What of the great majority? They are either too poor or too ignorant, or both, to be able to understand their own needs or to relieve them. Here then is our opportunity—first to teach, then to discharge some of the obligations we assumed when we accepted our diploma, which gave us the right to say to the world, We are competent to discover and cure all the ills of your mouth and teeth. Are we, all of us? If not, are we striving to learn, or are we satisfied to go on doing the same old things we learned (or thought we did) at college?

This is not a sermon, but some thoughts seemed to array themselves as a basis for some practical suggestions which we will now endeavor to present. While the title indicates two separate divisions, the one is so dependent upon the other that when speaking of the one we cannot ignore the other. As the care of the teeth of children is the discharge of our duty to the men and women of the future, we will consider the duty first, then how best to discharge it.

It is the consensus of opinion that the education of the people can best be accomplished by teaching the children, so we are beginning to learn how to do this and how to help these children to have and maintain clean healthy mouths. The medical profession has already accomplished something in the education of and the service to the children of the public schools. This service has undoubtedly been a factor in causing them to recognize that diseases of the mouth and teeth are quite as important and worthy of attention as any other disability. This recognition on the part of the doctors of medicine renders our task easier, but it also cuts out our work for us.

#### ALREADY ESTABLISHED DENTAL INFIRMARIES.

If we look over the efforts that have already been made, we will find that the most successful ones are those where a number of dentists banded together gave money, time, and service for the establishing and maintaining of free infirmaries for the care of the teeth of the deserving poor. When we demonstrate that we are willing to give, first of money according to our ability, then of a certain proportion of our time, in per-

sonally serving those who have need of our services but are too poor to afford it, then there will appear those who will be willing to assist in enlarging the work.

It was my privilege to visit the Free Dental Infirmary at Reading, Pa., which is almost ideal in its realization of the obligations that we owe the children. Here all or nearly all of those in the city who have any moral right to call themselves dentists are pledged to the cause, and give freely one-half day each month in personal service to those who have a right to such service, in an infirmary which is a model of equipment, cleanliness, and conduct. This was made possible through the co-operation of many in the community, who were encouraged, by observation of the initial effort of the dentists themselves, to come to their support.

It is unnecessary to review in detail the mental and physical impairment resulting from defective teeth and unwholesome mouths. It is sufficient to note the fact, and agree that it is someone's duty to see that the mouths of all the children in each community are looked after, that they may be clean, with dental organs in a condition to perform their function in the nourishment of the child, that he or she may grow to vigorous and useful manhood or womanhood.

#### ADVANTAGES FOR THE DENTAL PROFESSION.

That there is a general awakening of the profession all over the world is apparent, and wherever dentists have united in an unselfish effort, working together without thought of self-advancement or returns of any kind except that satisfac-

tion which comes from increasing the comfort and happiness of another, the greatest results have been obtained.

We may preach all we please without inducing our wealthy neighbor to loosen his purse-strings, but let us do something, and as soon as we begin to produce results he will take notice, and ask for an opportunity to share in the work and assist in broadening and perfecting the service. If all the dentists of every town and city in the land would get together, regardless of society, fraternal, or religious affiliations, and agree to rent and equip a room in which they would each serve one or two half-days each month, there would undoubtedly be enough broad-minded people of ability to help in a material way, who would come forward and insure the success of the enterprise.

Brothers of the Connecticut State Dental Society, get busy; get together, and get the unaffiliated men together, and *do it*. If you will, I predict the greatest advancement in dentistry in this state ever known anywhere. "In union there is strength"; this is one of the truest words you know. It requires a common cause to bring men together. We have the cause, and wherever men have come together it is noticeable that petty differences of opinion have vanished. On one occasion I tried my best, without avail, to bring two friends together who had become estranged. What I failed to accomplish has resulted from a common interest in this movement for the education and service of the school children, and now they are working together shoulder to shoulder in a common cause. God bless the cause!

This is one of the inevitable results of service in a common cause, and if this public-service movement should result in

nothing more than uniting the dental profession, it would be enough—but this is not all that it will accomplish. Working together as men must in these infirmaries will result in an interchange of ideas and a development of methods more nearly in harmony. Then what possibilities there will be for statistical research! If impressions were taken of the dentures of every child presenting for treatment, models made, and all data such as age, nationality, physical characteristics, etc., recorded on suitable blanks, what a wealth of material would be provided for the clearing up of many mooted points! Records of other mouth conditions might also be secured which could not fail to be useful to the investigator. Indeed, the possibilities for education are almost limitless, and will have such a reflex that the dentists themselves will derive quite as much benefit from the service as those whom they serve.

#### FIRST STEPS TOWARD ESTABLISHING A DENTAL INFIRMARY.

Recognition of the need of this education and service has existed in the minds of the majority for some time, but in only a few localities has it crystallized into action until quite recently. Many state and local societies, as well as the national body, have begun to move in this matter, but I am confident that we shall fail in anything like a perfect realization of our ideals if we confine the movement within the membership of our societies. We have been accused of exclusiveness in our organizations. We can refute this in no more effective manner than by giving every man practicing dentistry in our community an opportunity to do his part in this work. In places where a local society exists, a com-



mittee could be appointed to start the movement. Let them select the best man in the place who is not affiliated with the society to co-operate with them in securing the support of all the rest of the non-members. Where no society exists, a committee could be formed by one man going to his most promising colleague (sometimes called competitor) and securing his pledge to give some money and some time each month, also to aid in securing the interest and co-operation of all the other men in town. These two could select a third, and the committee would be formed. The work of such a committee would be to get every dentist in town to agree to pay his *pro rata* share of the expense necessary to provide a suitable dental equipment. This equipment need not be very elaborate in the beginning; second-hand chairs, engines, etc., can always be purchased at a small cost, and almost everyone has some instruments that can be spared, so that an operating equipment sufficient for a start could be provided at a small expense.

All this is possible in every town where there are from eight to twelve dentists. When this start has been made, it is more than probable that enough public-spirited citizens will be found to rent and complete the furnishing of a room and provide for its maintainence, including the services of a competent lady secretary to act as assistant and attend to the clerical work. Where this plan is not possible at once, the dentists composing the corps might each set apart one or two half-days each month for the service of deserving children in their own offices, until public interest has been sufficiently awakened to make a public infirmary a possibility. It is unnecessary to go further into details. These will work out, once the movement is started

and all the dentists are working together as one man. Simultaneously with this movement efforts should be made to interest those engaged in educational and charitable work, that opportunity may be secured for giving the necessary instruction in the public schools, and that provision may be made against the abuse of the privileges of the infirmary by those able to pay for dental services. Here again the details will develop to suit the conditions existing in each community. Only *get to work*, and be not discouraged if success does not come at once. Honest purpose, with industry, will win. "Keep moving."

#### THE TREATMENT OF THE CHILDREN.

With the infirmary a fact, the next problem that confronts us is how best to reach and serve those whom we desire to benefit. Here a few suggestions for the handling of children and the treatment of carious teeth in their mouths, based on long experience in private and infirmary practice, where many children were treated, may be in order.

First, it is absolutely necessary that we gain the confidence of the child. This is not always an easy task, especially if the parents have threatened the child with a visit to the dentist as a punishment for some offense, which is sometimes thoughtlessly done. Adults are almost always to blame when the child regards the dentist with fear; so many seem to delight in magnifying their suffering from dental operations. When this is done in the presence of children it seldom fails to impress them unfavorably. I remember one middle-aged gentleman, an attorney, who invariably slept through the major portion of every operation, but who always entertained any

acquaintance who might be in the waiting-room when he left the chair with a graphic account of his sufferings. On several occasions there were children present; then he would direct his story and his sympathy to them. Children seldom have fear of us unless it has been instilled into them by their elders, and sympathy usually increases our difficulties. For this reason I try to have them come alone, and under no condition will I permit the mother or father to stand beside the chair.

Most children are willing to be shown, and a little patience and tact combined with honesty will usually succeed. If you can impress the child at the first sitting that you have accomplished something without inflicting pain, you have gone far in gaining his or her confidence.

*Never deceive a child.* If you promise them not to hurt, keep your promise even if you fail to accomplish all you desired. If some pain is unavoidable, wait until some degree of confidence is established, then tell them so, and ask their co-operation, promising to desist at their request. If they *know* that you will keep your promise and obey such requests, they will feel that *they* are masters of the situation, and their pride will induce them to bear such discomfort as they know is unavoidable.

The experience of most of us has been with children coming from families having some appreciation of the importance of sound teeth, and it is quite a different proposition when we come to deal with children who come from homes where the only idea of a dentist is that he "pulls teeth," "hurts dreadfully," and is a thing to be avoided. This makes it all the more necessary that we avoid inflicting pain in the beginning.

#### METHODS AND MATERIALS FOR PRESERVING CHILDREN'S TEETH.

Let us look into the matter closely and see how nearly we agree on methods and materials used in conserving the teeth of children. If we make freedom from pain the object of paramount importance in our service to children, as I believe we should, can we satisfy our ideals as to the character of the operation?

Gold has been our standard of excellence in filling materials, and those high in authority have told us that children's teeth are as capable of sustaining and retaining a metallic filling as those of adults. Many of us have filled the teeth of very young children with gold, or when the parents were unable to afford gold, we have used amalgam, to satisfy our conception of excellence and permanence. The indestructibility and integrity of the material employed in filling a tooth is not the only factor that determines the permanence of the operation. Time will not permit a full consideration of this subject, but we may mention some of the causes of failure when gold or amalgam is used in children's teeth.

#### CAUSES OF FAILURE OF GOLD AND AMALGAM FILLINGS IN CHILDREN'S TEETH.

First, let us consider the condition in case of failures, aside from those cases where the filling is lost in bulk owing to insufficient anchorage. Without considering the cause or reason for recurrent caries around or beneath a filling, whether it be due to faulty preparation, failure to sterilize infected dentin, faulty insertion of the material, or failure to extend the cavity margins into immune

areas, the condition is practically the same, *i.e.* the filling is *in situ*, with more or less destruction of enamel and dentin around or beneath the filling. The very presence of the filling affords protection to the destructive organisms.

We do not deny that a gold or amalgam filling *can* be made even in the teeth of very young children, so that it will remain and fulfil its office permanently, but is it always wise to do it?

#### INDICATIONS FOR PERMANENT OR TEMPORARY FILLINGS.

Much has been written on the subject of "humane dentistry," and if we are to establish and maintain a good mental attitude on the part of children toward us we *must* be humane. Let us remember that our whole duty to children has not been discharged when we have filled the cavity perfectly. Let us get away from the idea that we must in every case attempt a so-called "permanent" filling. There are some conditions which contraindicate it; let us not ignore them. Because of conditions beyond our control, materials considered as temporary often make the most permanent operations in children's teeth.

#### AN INADVISABLE METHOD OF FILLING.

Take a not unusual case. A child of eight presents with the first permanent lower molar showing a mesio-occlusal cavity so far progressed that when it is opened and the *softened* dentin is removed, the pulp is covered with only a thin layer of dentin, which is undoubtedly infected. There are still those practitioners who, to satisfy their ideas, flood the cavity with creasote, phenol, or some similar drug, fill the deeper portion of the cavity with zinc oxyphosphate, and complete the filling with amalgam; all this at one sitting, or at best after seal-

ing in some anodyne dressing for a day or two. In order to do this thoroughly the application of the rubber dam is required, as is also more or less cutting of dentin and enamel to provide proper anchorage for the filling and to place the margins of the cavity in safe areas, and further, the final finishing and polishing of the amalgam. The average operator would require from forty-five minutes to an hour to do this as it should be done. To consider anything short of the most thorough technique would be an insult to this body.

If the operator who proceeds in the way described above would stop to consider the minute anatomy, physiology, pathology of the tooth, and the possible changes that may take place in the pulp under such treatment, he would seek, first, a substance for the filling of the deeper portion of the cavity which would be sedative to the pulp, render the infected dentin aseptic, and protect the pulp from thermal changes. Do phenol and zinc oxyphosphate fulfil these requisites? Second, he would seek a material for the remainder of the filling which could be inserted easily, and which would protect the walls of the cavity from recurrent caries, even though it may need occasional restoration of contour in order to maintain proper contact with the adjoining tooth. Both he and the little patient would be less fatigued if such a procedure could be performed in half the time, besides avoiding the use of the rubber dam.

#### SUGGESTIONS FOR A RAPID FILLING METHOD.

Let us now present another picture of the same case, giving the outlines of the technique, so that it may stand out more clearly.

The unsupported enamel is cut away

with sharp chisels. The softened dentin is removed with a pair of right and left spoon excavators, that must be very sharp and as large as the cavity will permit. The cavity is then ready for the filling without further shaping. Mix some iodoformogen cement rather stiff, and set it aside until all other preparations are complete. Then mix some copper oxyphosphate according to directions, Ames' Original, if the patient has experienced any discomfort, otherwise the New Process may be used. Wash the cavity with a warm sodium carbonate solution, apply cotton rolls to exclude the moisture, wipe the cavity dry with bibulous paper or absorbent cotton pledgets, fill the deeper portions, covering all or nearly all of the dentinal walls with the iodoformogen, being careful to keep it off the enamel walls. This will set promptly when inserted in the cavity. (If there is danger from thermal changes, a disk of asbestos felt may be placed over the iodoformogen while it is still plastic.) The copper oxyphosphate is then introduced with platinoid or German silver instruments. It may be hardened with a blast of warm air, or by covering it with a piece of hot base-plate gutta-percha, which has been previously provided. As soon as the cement becomes sufficiently hard to resist solution by the saliva, the filling may be trimmed with sharp knife trimmers. This whole operation will consume little more time than it has taken to describe it.

#### IDOFORMOGEN AND OXYPHOSPHATE OF COPPER FOR FILLING THE TEETH OF CHILDREN.

These materials have a decidedly sedative and stimulant action upon the pulp, besides possessing antiseptic properties. Copper phosphate will restore the contour and the contact, insuring

comfort in the mastication of food; it will outlast any other cement, and it will adhere so closely to the walls of the cavity as to require little or no retentive form in the cavity; because of this close adhesion it will preclude recurrent caries. Furthermore, if the contour is lost by attrition, it is easily and quickly restored by scraping the surface and adding some freshly mixed copper oxyphosphate, which will adhere to the old filling. All this can be accomplished without pain, without the use of the dreaded engine or the rubber dam, and is in thorough accord with the principles enunciated. About the only objection is that the filling becomes ebony black. This, however, should not overbalance its good qualities. Sentiment ought not to influence us in so important a matter as this. The physician does not hesitate to use strychnin and other poisons in proper doses; their toxic properties do not deter him from employing them when they are superior to other remedies, and it would seem that we, too, are justified in selecting our weapons with which to fight disease, for the same reasons.

Of course we must confine the use of copper oxyphosphate to those locations which are inconspicuous. It should not be used in pulpless teeth, for it will stain them, but it will not discolor a vital tooth.

If this paper will encourage the extension of our service to many not now receiving the benefits of our ability to teach and to cure, and will cause us to employ the methods of the physician and surgeon rather than those of the ear-penter, its object will be accomplished.

Let us, then, be up and doing,  
With a heart for any fate;  
Still achieving, still pursuing,  
Learn to labor and to wait.



*DISCUSSION.*

Dr. A. J. FLANAGAN, Springfield, Mass. It seems like the old times of the years gone by to have a man journey from the Philadelphia Dental College and come to New England and address us. If we go back in the history of dentistry it will be interesting and entertaining to find that way back in 1865 we had Garretson, we had Flagg, and later we had Stellwagen and Guilford come to New England and visit the various dental societies. In those days it was rather a rare occasion when we did not have a yearly visit from some representative of the old Philadelphia Dental College to give us the advanced, the new in dentistry. It is rather pleasing to record the fact that we have tonight a dental teacher from the middle west, who now makes his home in Philadelphia, and comes to us under the flag of the old Philadelphia Dental College to address us. May he have success in the East, as he has had in the West.

I was rather pleased when our friend Dr. Weeks said that God willed that people should owe us something. I did not have to go to the Bible to discover that, because I have been in practice now for twenty years.

Dr. Weeks has taken a broad stand on the question of the treatment of the teeth of children, and especially on the question of charitable work. Perhaps I had better confess than brag that for seven years I was attending dentist at a charitable institution in Springfield; for more than twelve years I have been dental surgeon on a hospital staff, so that I have had what might be termed, per-

haps not a scientific education, but practical experience, along these lines. This question of the charitable work of dentists as judged in comparison with that of physicians needs a little new understanding. Take, for instance, this city or any city, where medical men are doing charitable work—what does that work usually consist of? I am going to advance an opinion, after twelve years of experience, and that is this: The average physician, if he is in attendance at a medical hospital or in charitable institutions—what sort of work does he do, and how much time does he devote to it? That is what we must consider when we compare the charitable work of the dentist with that of the medical man. The medical man, after his regular office hours, which are usually from eight to nine in the morning, two to four in the afternoon, and sometimes from seven to eight in the evening, has his driver come to the door and is carried to the hospital where he may have in charge a dozen patients as medical adviser—and what does that really mean? He goes to the various wards—there is a house surgeon, there are assistants and nurses—and visits the twelve patients, which often does not take an hour. He leaves directions, if a wound needs cleansing or if the patient needs new medicine; he does not stop to do that himself, for his assistants can attend to all that. This has not taken one hour of his time, and yet we find the medical men rising up in their might and demanding that we dentists do something along similar lines.

Suppose a dentist spends an hour in charitable work, what does he accomplish? His work is entirely different; it does not consist in giving nurses and assistants directions to do so-and-so; the dentist must do the work himself, and by an hour of charitable work in dentistry but little can be accomplished. Yet, if a dental practitioner gives one-half day in a month for thorough dental service, he is doing more work and giving more in real service than the average medical man is during an attendance of one month in the average hospital.

Take the surgeon; what does his work consist of? If his patient is a public patient and comes into the public ward, he does not prepare the patient for the operation, give the anesthetic, or attend to the requirements after the operation; his assistant or assistants can do all that. He may take from a quarter to a half-hour to perform his operation—indeed, in a month many a prominent surgeon in New York city does not give six hours of actual service; and yet unfair comparisons are made. If a dentist gives an hour's time, nothing is thought of it, and no recognition is given for his work. On the other hand, patients are sent to the hospitals as charitable patients at a minimum charge of seven to ten dollars a week, but at times a surgeon who has charged no fee for the operation because he was on service at the time, receives a recompense on the quiet afterward because of special attention, while the hospital receives only its regular weekly rate. How about those medical and surgical cases in which the physician is called to the home of the sick and recommends the hospital because the patient has not the means to pay him for home treatment? There is an unwritten

history of philanthropic and charitable work in so-called hospitals and dispensaries which the public in general, and the dental profession in particular, need to peruse.

There is a condition, gentlemen, which should be explained more fully than it has been. If a dental dispensary is expected to do its best work, there must be at least one dentist there in regular daily attendance, similar to the service of an interne. Very little truly practical work can be accomplished without plenty of time and much brain work, backed by all that finger ability means, for in dentistry you can accomplish little by writing prescriptions.

In regard to the treatment of children's teeth, I was hoping that Dr. Weeks would speak of the use of silver nitrate, especially in the treatment of superficial caries in deciduous teeth, also of the use of gutta-percha. To be sure he mentioned base-plate gutta-percha, but not as I wished him to. I was brought up under the care and tuition of Dr. Flagg, and perhaps I am a gutta-percha enthusiast. I consider it of prime importance to educate parents to the fact that the eight molars of the deciduous set should be saved. The reason should be explained to them why these teeth are so important in the period of from eight to ten years of age, and why they, above all others, should be preserved. If a child of poor parentage at the age of four or five has an anterior tooth decaying, which we know is going to be lost at the age of six or seven, why torture the child by putting in cement fillings, when we can use silver nitrate; and why not do as the physician does, charge for the advice as well as the service? It is astonishing to find good dentists giving hours of service in advice, and applying

treatments, and getting not one cent for it. Would the physician render these services gratis?—yet we claim to be a branch of the healing art.

If the proper education had been given to the public by the dental profession in the past relative to dental advice, the general thought would not prevail at the present time that a dentist can charge a fee only for material service. We are to blame for these conditions.

The essayist speaks of the question of cement, and I am willing to admit that there is not much sense in using cement oxyphosphates in children's teeth. We frequently find, if there is a cavity in the first deciduous molar, that there is one in the second also, and what is to prevent us from making of these two cavities one simple cavity? The S. S. White Co. has had for years what they call a space-guard, to be used in making one simple cavity of these approximal cavities in deciduous molars. It consists of a little piece of tin covered with base-plate gutta-percha, one side of which is warmed; then the piece is forced to the bottom of the cavity, thus making a bridge over the septum of the gum between the deciduous molars. On this bridge of tin and gutta-percha you can build a filling of gutta-percha, cement, or amalgam. No one greater aid has been given to us in recent years than this space-guard in the saving of deciduous teeth with comfort to the patient and satisfaction to the dentist.

I agree with the essayist in his conception of the use of metals in deciduous teeth because of conditions we cannot control. The main object is to give service free of pain, and which will give comfort for the longest time. I have found nothing that exceeds in good qualities ordinary base-plate gutta-percha.

Someone may say that it wears out from attrition. True, but what is to prevent us from covering the gutta-percha with a small piece of gold, or some baser metal, to which a small headed pin has been soldered. This cover can be slightly warmed and pressed into the body of gutta-percha, thus constituting a metal covering or inlay over the gutta-percha. There is far too much neglect of children's teeth, because the average dental practitioner has not educated the parents to a proper and just estimate of the deciduous teeth. This education means also a proper recompense for prevention and treatment, rather than for operative work. Parents usually understand that a physician charges the same fee for relief of suffering in a child as in an adult. Why should dentists charge less, or dismiss the little patient with makeshift temporary relief? After our little patient has gone from the office we expect the Almighty to be kind to that child, but in any event another dentist will be.

I find that the greatest help in handling children consists in having the armamentarium ready. I doubt if anyone who treats children can retain a successful practice if he uses the rubber dam indiscriminately on children's teeth. We have any number of napkins and cotton rolls to be used in place of the dam, also special clamps and matrices, saliva ejectors and compressed air, all of which are helps in treating children that we did not have years ago.

The essayist spoke of calling in the unethical and unrecognized dental practitioners to fill positions in dispensaries and institutions. Does the essayist believe it to be proper to fill positions with the unethical? Again, can a dental practitioner be truly ethical who holds no membership or interest in any dental

or medical society? One of the things that boom medical societies today is the fact that practically no medical practitioner can hope for preferment or appointment without membership in at least his local or state society. I doubt if it would be possible in New England today to have a medical inspector or examiner appointed to any position of trust or preferment of a public or private nature, unless he were a member in good standing of his state or district society. If a practitioner is appointed to a position in a hospital, the first requirement is that he must be a member in good standing, and if he is not, he cannot get on the staff. It behooves us to remember these facts, and the principles that build up a profession are as necessary in dentistry as they are in medicine or in any other profession.

In closing, I wish to say that in discussing the question of comparison of the worth and appreciation of the medical and dental professions, we should assume a just and intelligent standpoint. By knowing general conditions, and informing the public of the relative value of medicine and dentistry under these conditions, we will soon have a standing in the minds of the public on a level equal to that accorded to medicine at the present time.

DR. L. C. TAYLOR, Hartford. This subject is very dear to my heart. That we have listened to a most excellent paper this evening no one can deny. I agree with the essayist in every point but one in the matter of education. The spirit and intent of the paper is most excellent, and I wish to congratulate the essayist especially in that he has not spoken altogether, as most men do, about wanting to examine the "teeth" of the children in the public schools. That

term used alone casts a suspicion upon the man who makes it. When you say you wish to examine the mouth—instead of merely the teeth—of a patient with a view to seeing what exists there, you show that you comprehend something, for that the jaws and the soft tissues and the alveolar borders are of as much importance as the teeth themselves, no one can deny, because they help to make up the character and quality of the child. We have lived too long in the land of tooth-carpenters; there is still too much extracting. A few days ago the Stomatological Society of New York passed resolutions condemning almost *in toto* the extraction of teeth in children under sixteen years of age. The practitioner who extracts a tooth simply because it is easier to do so than to care for it, is injuring the child, and not doing justice to his patient.

Our essayist speaks of the majority. The majority are the poor children whom he wishes to have cared for. That is a great work, a work we should all be interested in, because in time to come we can stamp out the teachings of the past forty years, when extracting teeth was the main feature of professional work. It is time to wake up, time to progress.

The essayist speaks of how he handles children and how he declines to allow the mother to be present with the child. I would take exception to that. If he will allow the mother to come with the child and will give her a lecture while he is working for it, he will get the finest control of the child possible to obtain. Moreover, when he has finished, he has probably converted the mother to recognize the necessity of caring for the mouth, and she will probably bring the child again.

Dr. Weeks speaks of the care of the



teeth of children as the discharge of our duty to the men and women of the future. Our duty, of course, is to care for them as best we can, but let us teach so that we can obtain control and carry them along when they become men and women. I want control of the children, but I also want the mothers who stand behind them.

Next the essayist spoke of disease of the mouth and teeth and its importance. This is a great field, because diseases that pertain to the mouth are most prevalent, and may be treated with the greatest benefit to the patient. I can name no less than twelve or fourteen patients who have told me frankly that I have cured their rheumatism, because it was oral conditions that had caused the disease. The toxic products in the mouth become so abnormal that the organs of the body decline to take care of them, and they are left to circulate in the system, making the patient believe that he has rheumatism. I explain to the patients that after the cause has been removed, the stomach tones up, the skin becomes normal, the poisons are eliminated, and the rheumatism is cured. That is only one of the phases of the importance of dental care, as the number of diseases and dangers that come from unhygienic mouth conditions is very great. I therefore claim that our principal duty consists in caring for the diseases of the mouth, which is paramount to the filling of teeth.

The essayist speaks of teaching and preaching. That is a right and proper statement. We should do something besides looking for simple cavities, which seems to be the principal object of many practitioners. There is more dental work being neglected today than is being done,

which is a point that many have paid very little attention to.

With regard to the question of necessary instruction in the public schools, I would say that the children should in school learn something besides studying music, or this or that art; they must be taught to appreciate clean mouths. Some say that they cannot understand this. Children understand more than they are credited with, and sometimes they grasp these points to a fuller extent and much more quickly than older persons.

The essayist speaks of the use of copper oxyphosphate as a filling material. I do not believe that copper oxyphosphate should be introduced into the mouth of a child, because equally as good results can be obtained by simply painting over the cavity with resin. By making a film of resin over the bottom of the cavity to protect the pulp from irritation and subsequent trouble, oxyphosphate can be inserted, and a gold or an amalgam filling built into it while it is still soft, yielding a good permanent filling for the child at eight years of age that will be of long duration if it is fairly well done, this method being applicable in almost all cases.

Dr. W. A. PRICE, Cleveland, Ohio. Someone asked me this afternoon if I would not say something of the work we have been doing in Cleveland for the care of children's teeth. I want to say to Dr. Taylor that in Cleveland all children have to go to school, so that in order to reach the children we have to go to the schools, but we do not simply examine but repair their teeth.

Dr. TAYLOR. Do you examine their mouths well?

Dr. PRICE. We examine them well.

and the gum tissues and the oral conditions are noted as carefully as the cavity conditions. Our plan of work is based on the following considerations: We take it for granted that every child's teeth and oral conditions should be taken care of. We have some eighty or ninety dentists in Cleveland, all members of our city society, who have agreed to give a week of their time or thirty-three dollars in money for the care of the teeth of the children of people who cannot afford to pay for the work. While we incidentally examine their mouths in the schools, we send the examination card to their parents with the statement that if they cannot afford to have their children's mouths put in good condition, we will do it. We have in conjunction with that work twenty lecturers, divided into four groups of five men, each group giving a lecture on one branch, making four separate lectures. Each lecture is given with the aid of a lantern, and each one takes fifteen minutes. In this way we put before an audience in an hour enough to make them think for some time, and I wish to say that the results of our work have been very gratifying indeed. No phase of our work is more important than the care of the children's teeth, which Dr. Weeks has so strongly emphasized. How many realize that of the children growing up today probably fifty per cent. of the boys would not be accepted in the United States army, because they have not teeth good enough for such service. When a nation like Germany has seized the opportunity of rendering more men capable of military service by the establishment of fifty clinics, and by making it compulsory for the people to have their teeth taken care of, it is an object lesson to us.

There is another matter that I wish

to speak of in this connection. If you go to the museum at Colorado Springs, you will find that in all the cliff-dwellers' skulls on exhibition there none of the deciduous teeth exhibit any caries. You may find a tooth broken off from a blow, but you will not find any caries. If you visit communities of Italy, where the people are largely engaged in out-of-door work and live on coarse foods, you find the deciduous teeth of the children beautifully developed, with strong enamel. Why is this? If you examine in a community such as your city or mine the teeth of children of parents of modern civilization, you will find that their deciduous teeth are chalky. I want to say from what study I have given to this subject that a great deal of damage is done in this direction by the teaching of "tocology," which has for its basic idea the regulation of the mother's diet during the period of pregnancy, with a view of developing a small osseous frame in the child for the comfort of the mother at the birth of the child. In the effort to produce small bones the child is starved of the calcium salts that make good teeth. We can trace defective teeth directly to the lack of nourishment of the child during its early life, the food being such as not to induce the proper formation of the teeth. I wish to ask how many mothers know of the necessity of feeding a child such food as will produce good teeth. To my mind this is one of the most important duties that we have for the future, *i.e.* to combat this fearful doctrine of tocology, and establish an understanding among people of all grades of society that they cannot afford to starve children before birth, for they are taking away from them that which is most necessary for their service in life as citizens; and we

must of necessity go into the schools and teach what foods children should have during the first four years of their lives. I have models of a number of cases; in one of these there are three children in the family, and the teeth of the first two were so poor that it seemed impossible to keep the deciduous set in the mouth for the normal length of time. The mother is an acknowledged student and advocate of the doctrine of tocology. The third child, however, was brought up under different conditions. After the third month of pregnancy the mother started the diet for the formation of splendid teeth for the baby, with the result that the deciduous teeth erupted as though they belonged to one of those cliff-dwellers, so perfectly were they formed, and such hard enamel they had. A correct system of feeding was carried on just as assiduously during the first four or five years, and the child's permanent teeth are now erupting with no cavities and with the enamel beautifully formed. There was no other reason for this child's having better teeth than the others than the better treatment which it received in the matter of diet. Is that not a sufficient warrant, if we wish to do our duty to the men and women of the future, to go before our communities and implore them, if not demand, that they take more care of the diet of the mother before the birth of children, and of the food of the children after birth?

Dr. F. T. MURLESS, Jr., Hartford. This is a matter concerning which I feel a great deal of enthusiasm. I have had occasion to take some special interest in it of late, and I am thoroughly impressed with the pathetic need of active efforts. In fact the need is so stupendous and the difficulties are so great that the situ-

ation is almost depressing. You will share my feelings when I tell you that one of the commissioners of public health of Chicago reported recently that in the public schools of that city, notwithstanding a rigid process of isolation, disinfection, and inspection of scarlatina cases, the readmission of these patients was almost uniformly followed by a fresh outbreak of scarlatina in the schoolroom to which they returned. This fact attracted so much attention that medical inspectors went over the cases again to see why this occurred, but were inclined to regard the recurrence of the disease as merely a matter of coincidence. When cultures were made from cavities in the teeth of these children it was discovered that for a considerable period after the child had returned to school there were germs of scarlatina in these cavities, and that fellow scholars were being infected through the common use of drinking-cups, lead pencils, and books. Therefore since we know the remedy, it is for us to apply it. Without doubt this terrible scourge could be stamped out but for oral incubation of the bacillus. To do this every child must have not *post facto* but prophylactic dental attention. There are many details that we shall have to work out in regard to administration before much alteration can be made in the situation. It is a question in my mind whether here in the East, in most communities, we can at present have oral examinations enforced as they have in Cleveland. The people in our staid conservative New England states are a little averse to examination of their children's teeth in schools. I believe a beginning may be made by limiting our attentions at first to the teeth of the children of the deserving poor. In speaking with one of the prin-



cipals of a public school in one of our large cities, I found that in a city of eighty thousand people it was estimated that they had fourteen thousand school children. According to the statistics which are furnished by the examination of millions of children, it is safe to say that ninety per cent. of them are in need of immediate oral attention. I asked how many in this city were children of the deserving poor, and my informant said, "Well, you can say that ten per cent. of this ninety per cent. especially deserve consideration." Among these fourteen thousand then we have fourteen hundred who cannot pay for necessary dental service. That is comparatively few, but when we think of the aggregate amount of hours of work required to give even these fourteen hundred children comfort and protection, we have a stupendous proposition before us.

A way to get at these deserving children, I might suggest, would be by means of a blank to be filled out by the school principal or the mother superior, recommending the child and giving enough of the facts in regard to the family so that the case could be traced, which would seem to me to be quite essential. There is another feature of this work that is going to be very difficult to handle at first, namely, its financial aspect. Until, through active work, the people of a community are able to appreciate how directly dental attention affects the health of the child, appropriations of public money will be difficult to secure, but if started with private contributions and voluntary dental attendance, this movement will soon secure recognition, and become a part of the municipal machinery of every city and town.

Dr. WEEKS (closing the discussion). I would like to ask every man present to

read the paper when it is published thoughtfully and carefully, and try to see what was in my mind when I wrote it.

When we are called upon to go to war, we do not stop to ask what religion, cult, or grade of society a man belongs to before we allow him to go into the army and fight. Let us get over this narrowness and give every fellow, no matter whether he is in our association or not, a chance to do his duty. That is all I ask you to do. It will broaden you; it will broaden him, and it will bring him into the society in spite of everything.

I brought out one method of treating children's teeth for two reasons. First, I have used that method over twenty years, and I have seen the teeth of children improve under it. I have had experience in treating the mouths of young girls of seventeen or eighteen years of age, in whom the teeth of one side were kept filled with copper oxyphosphate from an early age, while those of the other side presented fresh cavities in which the difference in the character of the teeth of the two sides was very marked. Moreover, I am sure that the majority of men within hearing distance of me have not had so much experience with this material.

In regard to Dr. Flanagan's remarks on the question of medical societies, let me say that you must keep in mind the fact that nearly every young man entering that profession thinks it is his duty to join a society. Do the dental graduates think so? Not at all.

Dr. FLANAGAN. Who is to blame?

Dr. WEEKS. We are. My suggestion was offered not in the spirit of blame, but was meant to help you to bring about that which you wish.



Regarding the choice of material for teeth of children, do not overlook the antiseptic and therapeutic properties of the materials that go into a cavity. I agree most heartily with Dr. Taylor that cavities are only an incident in mouth conditions, and it is the condition of the whole mouth that we as dental physicians should look after.

It has been said by Dr. Flanagan that we are limited in the amount of service. Like him, I am going to confess and not brag. Our good friend, Dr. Tracy, with some others, has charge of a dental clinic in New York connected with one of the hospitals, and while I was in New York one winter I volunteered to help out a little. There was a trained nurse in attendance who assisted the operators and

kept the records. She reported that the average for each one of the several afternoons that I served was fourteen children treated and twenty-six fillings made. I am no smarter than a great many others, but that is a lot of work to do in an afternoon. Yet it can be easily done if you have a trained assistant and follow the methods and use the materials suggested.

In closing, I wish to say that there are wonderful possibilities in this line of work, if you will all become as enthusiastic as many are. If you will, the ways and means will work out naturally.

The meeting then adjourned until Wednesday morning at 10 o'clock.

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### WEDNESDAY—Morning Session.

The meeting was called to order Wednesday morning at 11 o'clock by the president, Dr. Brown.

The first order of business for the

session was the reading of a paper by Dr. NORMAN S. ESSIG, Philadelphia, Pa., entitled "True Art in Dental Prosthetics." (See following page.)

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# TRUE ART IN DENTAL PROSTHETICS.

By NORMAN S. ESSIG, D.D.S., Philadelphia, Pa.

I SHALL endeavor to bring before you this morning a subject that has interested me for a number of years, and to which I have given much time and attention. What I have to say may be considered a plea for better prosthetic dentistry, with a description of a few efforts on my

no reason why we, as prosthetists, should not bring our imitations to the same state of perfection.

That I may be better able to convey to you the ideas I have in mind on this subject, I will pass around the few specimens I have brought with me, and

FIG. 1.



FIG. 2.



part toward the truly artistic in dental prosthetics. That there is a growing interest in this important field is evident, and much of the so-called artistic work which we have seen is a step in the right direction.

We are living in an era of imitation. There is hardly anything that is not imitated, and often so closely that the imitation is hardly discernible from the genuine article. For instance, fabrics of all kinds, wood, ivory, etc., all manufactured goods, are so closely imitated that it is impossible to detect them without appropriate physical tests, and there is

you will observe that they are very close imitations. I have placed the porcelain imitations alongside the natural teeth for comparison. The first specimen is a set of six anterior teeth, in which one of the centrals has been taken out, and the imitation put in its place. (See Fig. 1.) Next, a set of four anterior teeth, two natural and two artificial, of which the right central and the right lateral are the imitations. (Fig. 2.)

We should realize that the duty of the prosthetist to his patient is not the mere replacement of the teeth that are lost; we owe more than that to our patients,

for it lies within our capabilities oftentimes to give them, not only a denture that will serve to properly masticate food, but something that will fill out to normal contour the portion of the cheek

ting the patient to close the teeth, and then firmly pressing a piece of modeling compound or wax against the upper and lower anterior teeth, from which impression I run out my model. This gives me

FIG. 3.

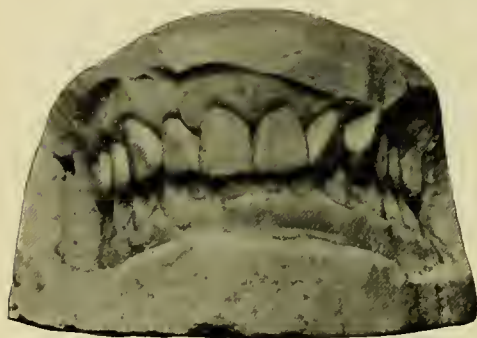


FIG. 4.



which falls on account of the loss of teeth, and to restore the facial expression, or even improve it—something that when adjusted does not attract attention nor proclaim itself as artificial.

FIG. 5.



a record which I file away with the name and any notes that may seem necessary at the time. I thus have a record which is absolutely accurate and can be referred to in connection with the impression taken later for the piece itself. (Fig. 4.)

Some years ago a young man, a recent graduate, came to me for instructions, asking for a few hints in prosthetic work which might be considered the legitimate short cuts, that would be of value to him in the course of his dental practice, and among other things I got him to reproduce his own mouth. The young man had had no experience; as a matter of fact, he had just received his degree. He has very kindly sent me the pieces for your inspection. (Fig. 5.) This shows very clearly that even though one has not had great experience, if shown the proper technique it is quite possible to produce very artistic results. This is a piece of work I should be proud of, were I the author of it.

My method is to prepare a model to be used as a record, to which I can refer in the future if there is a change from premature loosening, accident, or structural breakdown. (Fig. 3.) I secure this model of the mouth by get-

Much has been said and written with regard to artistic prosthetic work, and I think that all efforts in that direction are a step forward, although, thus far, we are not near the exact reproductions of the natural teeth. The dental depots are making what they call artistic teeth, but they are inadequate and open to much criticism. We cannot, however, expect the dental depot to carry a stock of teeth to suit every case presented to us, therefore we must consider their stock only as our raw materials. At this point,

struck it lightly with an instrument, causing it to break directly across the pins, as you see. (See Fig. 7, *b*.) I explained to her the reason, which had no particular meaning to her until I took a straight-pin tooth and struck it in the same manner, without being able to break it. So I cannot refrain at this time, when we have so many dentists present, and also representatives of some of the dental depots, from making a plea for more straight-pin teeth, and, at the same time, teeth with plenty

FIG. 6.

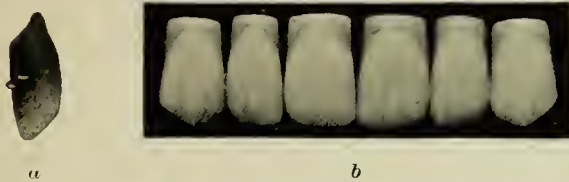


FIG. 7.



we cannot deplore too strongly the passing of the straight-pin tooth. Cross-pin teeth are much more numerous, having almost supplanted the straight-pin teeth, until it is next to impossible at the present time to find an assortment of those having straight pins varied enough to select from. We find particularly long teeth at the present time with cross pins. (Fig. 6, *a*, *b*.) This is contrary to the old teachings. We used to be taught that we should not use cross-pin teeth, except in instances where the space is so small and the bite so close that we could not use anything else. I have here a facing from a crown which cracked in the mouth and came away three or four times, each time being broken directly across the pins. My patient asked why this happened so often, rather censuring me for it. (See Fig. 7, *a*.) I took from my case a cross-pin tooth with plenty of structure,

of material so that we can make small teeth out of large ones if we so desire. We cannot make large teeth from small ones without adding porcelain to them, but in the majority of instances, if we have plenty of material, we can make anything our case demands of us. We are not always able to do our best or to adhere strictly to the standard we have set for ourselves, for the reason that we cannot get the "raw materials." I have here a set of fourteen teeth of a large mold; unfortunately, this mold is not to be had now. (See Fig. 8.) This set I have gone over according to my idea of what the natural teeth should be at about the time when the average person requires an artificial denture. (See Fig. 9.) The teeth in Fig. 8 are of a size and form, as I said before, not easy to obtain now, and in anticipation of such difficulties I learned mold-making; I



made this mold myself (Fig. 9), and can duplicate it at any time that I find it necessary to use them.

rather than anyone else to have the work done, as it is reasonable to suppose that he can replace them better than the new

FIG. 8.



Returning to the question of the record models, there is another feature in connection with this method which has always been interesting to me, and which from the standpoint of remuneration, as

man who has never seen the natural teeth.

In many instances, the impression taken at the time of the making of the denture has to be mutilated, especially if

FIG. 9.



well as the artistic, I hope will interest you. Sooner or later the patient will require the replacement of a single tooth or more, and if he knows that his dentist has safely filed away the model of his mouth as it was, he will go to him

it be a rubber piece. In case it be a metallic piece the model is not marred to the same extent. To make my meaning clear, I will describe a case in my practice, with my method of procedure. A woman who had been a patient for a

number of years, and for whom I had prepared a record model at the first sign of pyorrheal disturbance, in the course of events was forced to lose the six anterior teeth in the upper mouth, having lost several other teeth earlier in life. I had carried the case along to this point, preparing her step by step for the loss that was sure to follow. The lady was very prominent socially, and in almost every other way that a woman can be prominent, besides being a very handsome woman, with consequently a just cause for some vanity. She could not afford the time for seclusion after the extraction of the teeth, and it therefore became necessary to arrange matters without having her retire from her duties for the period of time required, and also to avoid a shock to her and her friends. I ligated all the loose teeth with a fine linen thread, and took an impression, from which I made a model. A fine saw was then passed between the teeth on the model and each one broken off carefully, retaining the plaster teeth, or in other words, the portion of the plaster teeth which was characteristic. I laid them carefully in front of me and carved the model to imitate a mouth from which the teeth had been freshly extracted. After that was done, I took the teeth I had broken off the model and reproduced in porcelain each and every one of these in detail and stained them to faithfully reproduce the natural teeth. My record was then used to obtain the arrangement of the teeth, after which the piece was finished, and on a given day she had the teeth extracted, and in fifteen minutes after she had the last loose tooth removed I put the plate in her mouth. This required some courage, because the entire scheme would have failed had there been any discrepancy in car-

ing the model. She went, however, in a few minutes to her club, eating her luncheon without difficulty, and the effect was so natural that her husband did not know for a year that there had been any change in her mouth. At the end of that time I found it necessary to compensate for some shrinkage, and was asked if two wrinkles in her face could be removed. I informed her that it could be done. Then she wanted to know if they could be replaced if their removal should make her appearance unnatural. She concluded to have the wrinkles removed, and this was done by thickening the plate at the required spot. When she went home her husband thought her face was slightly swollen, and asked her if she did not have the toothache. She then confessed that she had had all of her teeth taken out. I have always thought that it would have been as well if she had kept up the deception, and had the wrinkles replaced without saying any more about it than was necessary. However, she said that her sister, who was abroad at the time, would soon return, and if there was anything noticeable about her mouth she would be sure to observe it, she having been away for two years. She came to my office afterward and told me that her sister's attention had not been directed to the mouth, and we believe that she also was deceived, so that her entire family, with the exception of her husband, knows nothing of any change in her mouth to this day.

This method, together with the close imitation of the natural organs, shows that it is not necessary to subject our patients or their friends to a shock, either before or after the piece is made.

There is another feature that appeals to me as a factor of the truly artistic in prosthetic dentistry. It is not suffi-

cient, to my mind, that we replace the natural organs by artificial dentures or bridge work. We should construct a piece that is not only pleasant to the

have had patients ask me if I could not roughen the plate, that it was so smooth they noticed it all the time, and it made bread feel like cotton-wool in the mouth.

FIG. 10.

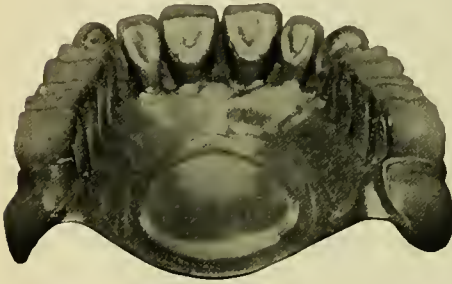
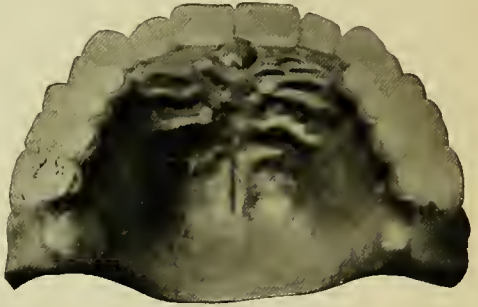


FIG. 11.



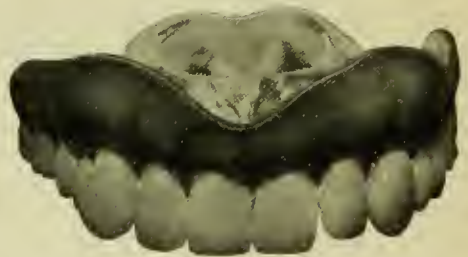
tongue, but that will restore as fully as possible the masticating function, the controlling of the food bolus in the mouth by the tongue, and furnish the self-cleansing spaces that add so greatly to the general comfort of the mouth; in

Therefore the application of the rugæ on all dentures is an important feature, and instead of giving to the tongue side of the denture a perfectly smooth surface, the rugæ should be restored, giving it a somewhat irregular surface, which

FIG. 12.



FIG. 13.



fact, everything should be done to render the mouth as comfortable as possible. A denture, especially a rubber one, with smooth surfaces over which the tongue slips, surfaces that do not tend to control the food at all, makes it extremely difficult for the patient either to become comfortable or proficient in its use. I

relieves the conditions to which I allude, besides improving articulate speech.

The lingual aspect of the teeth themselves is also an important one. They should present a rounded surface. This can be done in several ways. The metal plate is the one in which this feature is most neglected. Teeth for vulcanite at-

tachment are larger and give more rounded surfaces; however, rubber is not always indicated.

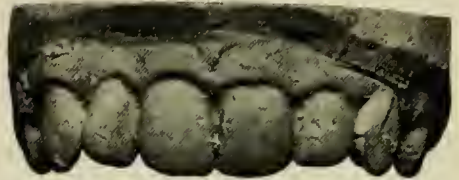
Here is a gold denture with rubber attachment. (Fig. 10.) The teeth are attached by means of solder, and the lingual surfaces are built out, which gives

The next specimen (Fig. 13) is one that was worn for five or six years, and I do not exhibit it as a specimen of porcelain or continuous-gum work. It is noticeable that the plate was broken and no care taken in mending it, and it was never worn afterward. The arrangement

FIG. 14.



FIG. 15.



the patient a feeling of comfort never experienced by a flat backing, for if the tongue comes in contact with a perfectly smooth surface the patient is conscious of the condition at all times, and much time is required before one can become accustomed to the unnatural condition and is able to forget the presence of the

of the teeth, however, and the character of their surface, is to my mind cleverly wrought. This was done by adding ordinary continuous-gum body to the teeth, which after being burned was polished with a sandpaper disk, followed by a piece of wood armed with oxid of tin to finish.

FIG. 16.

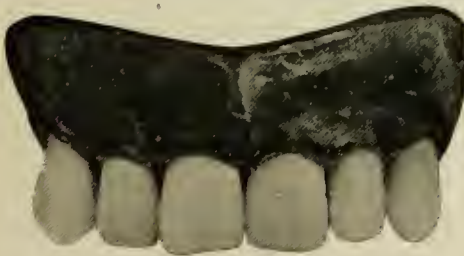


FIG. 17.



denture. The rugæ and rounding up of the lingual aspect is shown in Fig. 11, or as nearly as it can be obtained with the artificial teeth made at present.

This full upper and lower denture (Fig. 12) was made during the time that Dr. Chas. J. Essig was professor of prosthetic dentistry in the University of Pennsylvania, as a technical piece.

I present here a model representing the case of a lady who was edentulous. When she came to me for a denture she brought her daughter, whose mouth, she said, was like her own at the same age. She wanted a plate with the teeth and arrangement similar to her daughter's. I took an impression of the daughter's mouth and made the denture according



to this record model. (See Figs. 14 and 15.)

A similar case is represented in Figs. 16 and 17.

With regard to the form of porcelain teeth: From what I know of mold-making, there seems to be too much

round out in the process of burning and the result would be much more artistic, and they would also be far easier to adapt to any given case.

In remodeling porcelain teeth, it is always my plan to take the largest molds I can get and cut them down, making

FIG. 18.



FIG. 19.



trimming of the tooth as it comes from the mold.

There is a great deal less difference between pairs of centrals, laterals, or canines than there is in the pairs of natural teeth as we find them in the mouths of young adults, and if the dental manufacturing companies would leave their teeth more irregular and allow the lines made by the mold to remain, they would

from them as nearly as possible what I desire. (See Figs. 18 and 19.)

The various points to which I have endeavored to direct your attention can be better understood by a careful inspection of the specimens than by further verbal description, but I shall be only too glad to make clear any points which may require further explanation.

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### DISCUSSION.

DR. C. FRANK BLIVEN, Worcester, Mass. It is certainly very encouraging to all of us to have listened to this excellent address and to know that there are men growing up in our communities who have taken up work of this kind. For if our profession has been behind in anything, it has been so in this direction. There are, of course, some men so constituted that they can do both the artistic and the mechanical work, but there are a lot

of men who can do good artistic work but not good mechanical work, or *vice versa*, and in the future I think the well-appointed office will have both the mechanical and the artistic man, who, together will be capable of producing natural results. I doubt not that some have been successful in this respect, but it is utterly impossible for me to get any satisfaction out of a laboratory man in carrying out any ideas of this kind.

The essayist spoke of men ordering teeth in sets of a hundred. A number of years ago I had a talk with one of our prominent dental manufacturers in an attempt to secure teeth that I wanted. He took me to the counter and showed me a set of small teeth of a certain number—I cannot remember the number now, but they were small white teeth—and said: “Down on Tremont street we have a customer who orders every month one hundred sets of these teeth, and as long as we can supply him with that number and keep our business going, we are certainly not going to spend much time with men like you.” That was the encouragement I received twenty years ago along this line of work.

As to porcelain block teeth, I have been able many times to select what I wanted in the color of the gum and also of the teeth, but not the size, and by adding porcelain to them and re-baking I have been able to obtain very good results. As my clinic which I am going to give this afternoon is concerned with this subject, it will perhaps be just as well to speak on it now. Unfortunately, my assistant left out some work of this kind done twenty years ago, and I have with me only just a few specimens that she happened to pack up for me. I trust you will not criticize this plate, as it was selected from an old lot. On one side of the plate [demonstrating] you will find the teeth as they are usually set up. On the other side a little staining work was done, demonstrating the possibilities in reproducing the effects that we find in elderly mouths. On this card [demonstrating] beginning on one side, you will find a slight change made in one of the molars, so slight that you would hardly detect it. To one of these two bicuspids [demonstrating] a little

pink gum has been added. The other is the natural tooth; it also shows where there has been a slight erosion. This canine [demonstrating] is from a case that came under my treatment some fifteen years ago. The patient, a lady, had what we call Hutchinson's teeth, and on that canine a crown had been put, which was a beautiful piece of ceramic art, but wholly inappropriate for her mouth. She wished to know if I could not in some way change that crown so that it would look more natural. I made this [demonstrating] as a trial piece and showed it to her, and afterward replaced her crown with one like it. The lateral shows a slight imitation of a check in it. The central is a reproduction of a deciduous tooth that we sometimes see, with white spots. This kind of work certainly offers a broad field, and I regret very much that I am unfortunate in not bringing with me my best specimens. Some of them were shown before the Connecticut Valley Society some eighteen years ago, and it is very encouraging to find now and then in different localities men who have taken up this work. In regard to taking models of the mouths of patients who will lose their teeth eventually, I think every dentist should take them, especially for patients who appreciate a realistic reproduction of their teeth. If a dentist is not able to produce the desired result himself, he can select a man in or near his locality who can, which is a creditable procedure on his part that will add to his reputation for honesty and liberality, and advance the high ideals that should be the fundamental principles of every man practicing dentistry today.

Dr. HENRY McMANUS, Hartford. Privately, for a good many years I have said that when I would be in position

to stand up and say "twenty years ago," and have it carry probable conviction, I would be on my feet at dental meetings talking most of the time. That anniversary passed in February, and I now am in position to carry out my intention. That in a measure accounts for my presence here today, but my principal reason for coming was to hear what my friend Dr. Essig had to say.

Dr. Norman Essig's father, in my opinion, was the first man to make the prosthetic branch of the dental profession respectable.

When I broke into the dental profession "twenty years ago," the men who made rubber plates did it in an obscure section of their laboratory, principally to pay their rent. The dentist was ashamed of the fact that he did such work, and only made plates from force of circumstances. After scraping rubber for six months in Dr. Hitchcock's office, I went to Philadelphia with the intention of avoiding such work in the future. I had the good fortune to know Dr. Essig's father, and he taught me the error of my ways in about eighteen minutes, and since that day I have devoted all the time possible to the manufacture of artificial dentures, and had I acted entirely on my own volition I would have done nothing else. To me the replacing of teeth for people who have been so unfortunate as to lose them is the most vital and important work that the dentist can do.

When we fill teeth, whether with gold, amalgam, porcelain or gold inlays, we are simply doing patchwork, and I think you will admit that however well a filling may be put in, sooner or later, if the patient lives long enough, it must be renewed. When we make and insert a set of teeth we have accomplished an

end in life, and we have done that which at least has given us an excuse for living, and to my way of thinking the prosthetic dentist today is gradually coming into his own. He is the dentist that really accomplishes results.

I feel firmly convinced that there is no more beautiful example in the world of commercializing art than that characterized by the dental profession today. We wander about from pillar to post, and have taken up every passing fad and fancy, and we have sat and listened, and in some instances taken part in windy discussions on how to raise the standard of the profession by educating the public. We do not need half as much to educate the public as we need to educate the dentist to doing good honest conscientious work—and I think, when we say honest conscientious work, we mean of necessity, if English words mean anything to us, artistic work—and the one function in which dentistry should be more interested than in anything else is the replacing of the organs of mastication. All that patients care about is to have their friends deceived into the idea that they have retained their natural teeth, and to accomplish this we must go to the byways and hedges and take what we find and remodel it to fit each individual case.

Some of the specimens which Dr. Essig has made are absolutely marvelous, and I think the work the father started is going to be carried out to its proper conclusion by what the son is doing today. Personally, I wish to offer the essayist my thanks, and I almost feel emboldened to offer those of the profession for the work he has accomplished.

Dr. ESSIG (closing the discussion). I do not wish to add anything in closing the discussion, except to thank those

present and the members of the Connecticut Society for their kind attention, their interest, and their hospitality extended to me during my stay in New Haven.

Under the head of miscellaneous business—the communication from the National Dental Association being read, proposing that the Connecticut Society become affiliated with the National, and that its transactions be published in the National journal—Dr. James McManus moved that in view of the uncertainty as to what would be done by the National in this respect, and what the outcome of the proposed new journal would be, the communication be laid on the table and be taken up next year.

The motion was seconded and carried.

The communication from the Miller International Memorial Fund Committee by Dr. Brophy, chairman of the International fund, was taken up, together with that submitted by the National or Columbus Fund, submitted by Dr. Mills.

After considerable discussion, Dr. McMANUS moved that the society appropriate \$100.00 to the International fund, and \$50.00 to the National fund.

The motion was duly seconded and carried.

Dr. F. T. MURLLESS, Jr., presented the following amendment to the by-laws, with regard to increasing the membership of the association:

*To Article IV, Sec. I of the By-laws add the following:* The initiation fee and dues for two years shall be remitted to all newly licensed practitioners who shall make application for membership in this association within one year of the time of the granting of license to practice.

The President announced that the amendment would lie over for one year, and final action be taken at the next meeting.

Dr. JAMES McMANUS. There is a subject that I would like to call the attention of the society to, one which has interested me for years, and one to which I referred in a paper that I read some years ago; that is, that a benevolent association be formed in this country for the care of dentists who have lost the ability to work, similar to the one which has been in operation in England for several years. I would suggest that the association start a movement by which we could have a dental benevolent association in this state.

#### ELECTION OF OFFICERS.

The Nominating Committee then submitted the following report:

*President*—Dr. F. T. Murlless, Jr., Hartford.

*Vice-president*—Dr. R. H. W. Strang. Bridgeport.

*Treasurer*—Dr. H. A. Spang, New Haven.

*Secretary*—Dr. E. J. Abbott, Waterbury.

*Librarian*—Dr. F. G. Baldwin, New Haven.

*Editor*—Dr. I. B. Stilson, Stamford.

*Executive Committee*—Dr. C. H. Riggs, Hartford, Chairman; Dr. A. V. Prentis, New London; Dr. Geo. B. Palmer, New York city.

Motion was made and carried that the report be accepted, and that the president be empowered to cast the ballot of the society for the list of nominations as presented.

Dr. Murlless was then conducted to the chair and duly installed as president for the ensuing year.

Dr. HINDSLEY moved that the thanks of the society be extended to the *Dental*



*Cosmos* and to Dr. Anthony for his services in reporting the convention.

Motion carried.

Dr. JAMES McMANUS moved that the thanks of the society be extended to the essayists and clinicians who had taken part in the meeting.

Motion carried.

Dr. CHARLES McMANUS moved that the thanks of the society be extended to the retiring officers for the excellent meeting just held.

Motion carried.

There being no further business before the society, motion was made and carried to adjourn until next annual meeting.

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TRANSACTIONS

OF THE

Connecticut  
State Dental Association

AT ITS

Forty-seventh Annual Convention

HELD AT

HARTFORD, CONN.

April 18 and 19, 1911.

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PHILADELPHIA

PRESS OF THE "DENTAL COSMOS"

The S. S. White Dental Mfg. Co.

1911





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TRANSACTIONS  
OF THE  
Connecticut State Dental Association,  
AT ITS  
FORTY-SEVENTH ANNUAL CONVENTION,  
HELD AT  
Hartford, Conn., April 18 and 19, 1911.

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TUESDAY—Morning Session.

THE forty-seventh annual convention of the Connecticut State Dental Association was held in Unity Hall, Hartford, Conn., on Tuesday and Wednesday, April 18 and 19, 1911.

The first meeting was called to order on Tuesday morning at 11 o'clock by the president, Dr. F. T. Murlless, Jr., Hartford, Conn.

The first order of business was the reading of the minutes of the last meeting.

Dr. A. V. PRENTIS moved that the reading of the minutes be omitted, as they had been published in the printed Transactions. (Motion carried.)

REPORT OF THE BOARD OF CENSORS.

The Board of Censors then reported the following list of applications for membership in the society:

John J. Boyle, Hartford.  
Harry A. Burnes, Waterbury.  
Alfred W. Costales, Hartford.  
Eldon Lewis Crowell, Middletown.  
Philip J. Dahlm, Hartford.  
Owen J. Dennehy, Stonington.  
David W. Gaylord, Torrington.  
Monroe Griswold, Hartford.  
Orson H. Hart, Hartford.  
Howard W. Hawley, Danbury.  
Frank W. Holms, Norwich.  
E. W. Jarvis, Hartford.  
James H. Keane, Hartford.  
George H. Kneen, Derby.  
George G. Krall, New Haven.  
Robert H. Lieberthal, Jewett City.  
Clifford E. Lewis, Guilford.  
Morton J. Loeb, New Haven.  
William Edward McMahon, Bridgeport.  
Conrad Frederick Reiman, Ansonia.  
Walter H. Robinson, Rockville.  
John J. Roche, Hartford.  
Rudolph O. Schlosser, Hartford.  
Claude B. Tschummi, Waterbury.  
Bernard Wesbecher, New Haven.  
Louis Nelson Wiley, Thomsonville.



Dr. McLEAN moved that the secretary be instructed to cast one ballot for the entire list of applicants, and that they be declared duly elected to membership in the association.

The motion was unanimously carried.

The next order of business was the report of the treasurer, Dr. H. A. SPANG, New Haven, as follows:

#### TREASURER'S REPORT.

Year ending April 19, 1911.

##### *Receipts.*

From Dr. W. V. Lyon, treas., June 18, 1910 .....	\$758.49
From dues 1910 and 1911 .....	360.00
Interest on deposit .....	3.93
Total .....	\$1122.42

##### *Disbursements.*

Expenses to April 19, 1911 .....	\$194.71
Cash balance .....	\$927.71

H. A. SPANG, *Treasurer.*

Approved:

W. V. LYON,  
A. J. CUTTING,  
W. S. SMITH,

*Auditing Committee.*

#### AMENDMENT TO THE BY-LAWS.

The following amendment to the by-laws, which was presented at the last annual meeting, was called up for final action:

To Article IV, Sec. 1, of the By-laws *add the following:* The initiation fee and dues for two years shall be remitted to all newly licensed practitioners who shall make application for membership in this association within one year of the time of the granting of license to practice.

Dr. McLEAN moved as an amendment to this amendment that the word "may" be substituted for the word "shall" after the words "dues for two years."

The motion to amend the amendment was then carried, and on motion the amendment was adopted.

Dr. A. E. CARY, Hartford, on behalf of the Hartford Dental Society, extended to the members of the association the use of its rooms during the meeting.

Motion was made and carried to adjourn until 2 o'clock.

### TUESDAY—Afternoon Session.

The meeting was called to order Tuesday afternoon at 2.30 o'clock by the president, Dr. Murlless.

The President appointed the following as the Nominating Committee, with instructions to report at a later session: Drs. W. O. Beecher, F. W. Brown, and F. W. Hindsley.

The President also appointed as the Auditing Committee Drs. W. V. Lyon, A. J. Cutting, and W. S. Smith. (See Treasurer's report above.)

Dr. C. W. STRANG, on behalf of the members of the association, presented to Dr. Murlless a gavel to be used during the deliberations of the association.

REPORT OF COMMITTEE ON DENTAL  
LEGISLATION.

Dr. A. C. FONES, Bridgeport, chairman of the Committee on Dental Legislation, then presented the following report :

*Mr. President and Gentlemen*,—I hardly know where to start in on this question, because the subject of our dental legislation is a large one, but the members of this association should have a knowledge of what is being done at the present time in the legislature. In fact, we shall need your help, and in what way I shall outline to you.

You all probably know that the present dental law of the state of Connecticut was fathered by the Connecticut Dental Society. It passed in May 1893. Up to that time all the men who were in practice were permitted to register as dentists, and under the law to be known as registered dentists; any man coming after a certain date, stated in the law, was obliged to take the state board examinations before becoming a licensed practitioner. This continued in force until 1907, when it was found that our law was weak, because it permitted assistants to practice in the offices of registered or licensed dentists; these assistants were not fit to practice dentistry, and the privilege of having assistants was grossly abused. Practitioners were engaging men from factories and from various mechanical occupations in their laboratories. In a few weeks these assistants were trained in a very superficial manner to operate in crudely filling teeth, and in a short time thereafter they were filling teeth for the public at the chair. The mutilation and suffering caused by these men was immense, and intervention became imperative. In 1907 we applied to the legislature that this practice be stopped, and that in the future no man be permitted to practice dentistry unless he had proved before the state board that he was competent to do so. There was, however, a body of some sixty-five men who were already practicing as assistants, and it was thought that it would be an injustice to rob these men of their occupation in life, and that they should have the privilege of continuing to practice as assistants. A clause was therefore incorporated in the amendment that these men, if they registered with the state recorder by October 1,

1907, would be allowed the privilege of continuing as registered assistants. Up to the present time twenty of these men, after having studied in their leisure hours, have passed the state board examinations, and have become regularly registered practitioners, showing that there was good material among them. There are, however, about forty-five men left who have not been inclined to study, and who, in order to obtain licenses to practice and open individual offices, tried, two years ago, to break through the legislature with an amendment to our law and to legislate themselves into licenses. This amendment went so far as to pass the house; it was checked in the senate by one vote, and was finally killed. Again this year the same effort is being made. An amendment has been presented to the legislature, and a few hearings have been held before the Public Health and Safety Committee. These men are being led by Mr. Carleton E. Hoadley, county health officer of the county of New Haven, and at the present time we believe they are making progress, although the ultimate outcome of their efforts is very uncertain. Personally, I do not believe that the legislature will permit the juggling of the law in such a way that these men will be granted a license without having proved their competence. Nevertheless, we may need assistance from the various members of our state organization if this amendment is reported upon favorably by the Public Health and Safety Committee, before which the hearings are being held. If it should be reported back favorably to the house, it behooves every member of our association to write a personal letter to his representative and senator condemning such action, or to see them personally, in order to bring the greatest influence possible to bear to kill this measure. At the present time the bill is in such shape that we believe we shall be able to combat it at another hearing before this committee. We are now outlining a plan of campaign to have a hearing before these men in order to bring these truths so clearly before them that the committee cannot help but see the justice of our claims, and recognize what great injustice it would be to those twenty men who have passed the examinations during the past four years, and also to the men who have gone to college and studied in order to pass the state board.

What we need now is your financial help, and I would like to ask that this association give us an appropriation up to the sum of two hundred dollars. We may not need that much, but we want some working capital to take care of the lawyer's fee and possibly of some other expenses. We have to engage a lawyer, as we need legal advice and representation in this matter, and we therefore ask that the association give us an appropriation of two hundred dollars for this work. If we get an unfavorable report in the legislature, I will see to it that the members of the association are apprized of that fact, and of what our committee believe to be the next move necessary for the members to help us in.

Dr. FONES. I move that the society appropriate two hundred dollars for the use of the Legislative Committee.

The motion was duly seconded and carried.

The next order of business was the report of the Committee on Necrology.

#### REPORT OF THE COMMITTEE ON NECROLOGY.

Dr. C. W. STRANG, chairman, made the following report:

*Mr. President and Gentlemen,*—The Committee on Necrology would report that as far as they have been able to procure information, there has been no depletion of the members of this association during the past year.

Within the year, however, the death of an honorary member of this association has occurred, and it would seem to us fitting that a few words be spoken in commemoration of his life.

#### Dr. Luther D. Shepard.

Professor Luther D. Shepard of Boston died in January last. In the *Dental Cosmos* for March a very full report of the life and the work of Dr. Shepard may be found. He was well known to the members of the Connecticut Valley Dental Association, which he was very active in organizing, and was an honorary member of this association, known to most of

us. In supplementing the obituary notice published in the *Dental Cosmos*, I want to speak of Dr. Shepard as a man who was very courteous in his attitude to his professional brethren, and ready on all occasions to help and assist the young men of the profession in their work. I remember on one occasion—I think it was in December of 1884—a little girl, in one of the families in my *clientèle* and who had been under my care for a number of years, fell and had the misfortune of knocking out one of the lower central incisors, the other one being held merely by a delicate shred of tissue. The child was about six years of age. This accident occurred on a Thursday, and on the Sunday following I saw the case. The family physician had taken care of her as well as he could, but had failed to replace the teeth well down into their sockets. The parents were very solicitous for the welfare of the child and opposed any treatment that would in any way add to the suffering that she had already endured. In consequence of the anxiety of the parents and the age of the patient, it seemed best that I should not disturb the case any more than necessary, and so I ligated the teeth. I was working in the dark, and confess that if it had been my own child I should have removed the teeth and allowed nature to do the rest, but I saw what a very great misfortune it would have been in a few years had these teeth been removed, and had the jaw been allowed to contract.

I consulted Dr. Shepard by letter, and received an answer without delay advising treatment which I followed, rejoicing from that time onward that I followed the kindly advice of this good friend. Less than a year ago I saw this case again; the teeth were firm in their sockets, of a good color, and the occlusion was normal.

In grateful remembrance I would place a flower on the tomb of our dear departed friend, Dr. Luther D. Shepard.

The next order of business was the reading of the President's address, and the vice-president, Dr. R. H. W. Strang, was called to the chair, while the president, Dr. MURLLESS, read his annual address. (See next page.)

## PRESIDENT'S ADDRESS.

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By F. T. MURLLESS, Jr., D.D.S., Hartford.

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WHEN the history of our civilization during the past fifty years shall be written, it will be found that the profession of dentistry has played no small part in its development. The phenomenal progress of dentistry as an art and its achievements as a hygienic influence have been true to the spirit of the age, and indicative of its progress. The avidity with which the fruits of progress in the other arts and sciences have been grasped and assimilated by dentistry has been equaled only by the resourcefulness with which its multitudinous problems have been solved, and in the solving, dentistry, in return, has been enabled to contribute to the progress of kindred arts. In the interchange of technical and scientific knowledge the kinship and interdependence of the arts and sciences has become so intimate that the overlapping of special departments of activity has made many of them scarcely distinguishable from one another except in name. In truth, there is a strong element of prophecy in Story's words—"All arts are one, all fingers as it were upon one hand, all branches on one tree."

Of arts, dentistry in its kaleidoscopic phases is indeed the type—the blending of technique and diagnosis, the application of manual skill to conditions inti-

mate with the vital forces, at once concerned with the mathematical certainty of mechanical procedure and the variability of life's own processes. The potential outlook of dentistry today lies equally in the field of technics and in the promise of the biological laboratories of the world. In this lies our responsibility as well as our hopefulness. It is inspiring to believe that as new facts are gleaned in the study of heredity and environment, when the relation of adverse influences to species and type are more clearly established, dentistry will offer the more perfect remedies for deformity and disease. The more clearly the relation between bacterial activities and faulty metabolism be established, the more hopefully may we attack the point of infection. It is needless to assert that the responsibilities of the situation are upon us. The old adage that prevention is better than cure should be supplemented by adding that palliation is poorer. While yet in the twilight of the new day, palliation served its purpose. The relief of pain, even though temporary, is praiseworthy; it is, however, the resource of the nursery, the helping hand of the unskilled. Palliation but leads on to surgical interference and mutilation. The study of the etiology of a dis-



order often discloses its cure. The cure once found, humane precedent demands its application. Its possible harshness cannot logically excuse delay or laxity, for the duty of dentistry is the conservation of energy and the protection of life. The skill which soothes the sting and softens the blow of its application is blessed as is he who plants a tree for the shelter of posterity.

In the glory of a still newer outlook, dentistry is today ushering in yet another era. The prevention of disease—prophylaxis—is its greater mission. Out of the crucible into which were poured the labors of pioneer dentists, their hardships and their hopes and strivings of years, the pursuit of ideals, comes dentistry's new offering—oral hygiene. The field of dentistry has widened as do the terms of a geometrical progression. At first confined to the extraction of a tooth, in succession we see the efforts of dentistry focused on a single tooth and an individual cavity, and later, with wider vision, upon the denture as a whole and the defects disclosed as jeopardizing the entire dental apparatus, until now the oral cavity, with its mucous and peridental membranes, its bacteria and its infections, claims the attention of the modern dentist, while the digestive tract and its functions and processes are becoming in a greater sense the care of the profession of dentistry.

Great strides have been made in the preservation of the dental apparatus as an active part of the digestive tract, but all this is reparative only. Likewise the masterly handling of surgical problems, and the laborious experiments which have made them possible for the defense of the human body afflicted with progressive disease, fail in the final analysis because they are not reconstructive. Both alike

are merely defensive; facing backward, like King Canute, they merely order the waves of danger to proceed no farther, and misdirected energy is the price of their success.

It is a recognized fact that the infective disorders gain entrance to the body at points where congestion or traumatism has disestablished function. The mucous membranes are especially susceptible to their interferences. Normal mucous membrane, bathed with its perennial secretions, is entrenched behind an efficient barrier, but a point of dryness in pharynx or throat means the adherence of bacteria, and the habitual stress of undigested food determines irritated areas along the receptive villi of the digestive tract, and the absorption of the germs of specific disease. These germs are ever present in the mouth, cultured in cavities in the teeth and in inaccessible embrasures, defying the corrective influence of the saliva, overstimulating the mucous glands to the point of irritation, and being swept in the flood of saliva to such points of entrance as they may find. Myriads of these fail. Especially in childhood vitality is insistent; but once the vulnerable point is reached—"The young disease, that must subdue at length, grows with his growth, and strengthens with his strength." The train of disorders, beginning in the mouth and localized in some distant organ, at length demands repair, palliation, or, as a last resort, mutilation.

It is daily being demonstrated that this flood of disorders may be averted. The same energies which are being expended in the control of resulting deformities and diseases would conserve the health and direct the development of a multitude of growing children, who else would be destined to furnish the mate-

rial for future futile and uneconomic repair and surgery. The oral cavity is the field in which to meet these contaminating influences. Dental operations have already become reparative. Oral hygiene is prophylactic. That health may be secured for childhood and broader efficiency thus be found in the adult is the concern of oral hygiene, the new vocation of the profession of dentistry.

Dr. FONES. In view of the fact that this subject is to be discussed especially this evening, I move that we extend to Dr. Murlless a vote of thanks for his very able address, and pass on to the

next order of business. This evening Dr. Ebersole is to discuss this question in full, and to avoid repetition, and as Dr. Ebersole is the guest of the society, I think he ought to have the first say in this discussion of oral hygiene. It is for these reasons that I make this motion.

Motion was seconded and carried.

The President resumed the chair and announced as the next order of business the reading of a paper by Dr. N. S. HOFF, Ann Arbor, Mich., entitled "The Technical Treatment of Peridentitis." (See next page.)

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## THE TECHNICAL TREATMENT OF PERIODONTITIS.

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By N. S. HOFF, D.D.S., Ann Arbor, Mich.

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EVERY writer and speaker on this subject has encountered the difficulty of tersely and intelligently expressing his ideas of the pathologic conditions involving the periodontal structures he wishes to describe and treat.

### NOMENCLATURE AND CLASSIFICATION.

I have selected the name periodontitis, not to increase our difficulties by still further complicating dental nomenclature, but that I may express in logical terms the different stages of inflammation of the supporting tissues immediately associated with the roots of the teeth. All inflammatory and pathologic conditions of the gum, periodontal membrane, and alveolar process I include under the name of periodontitis, and by qualifying this name I find it capable of intelligently expressing the several ordinary stages and varieties of disease in the root environment. For instance, we may find *traumatic periodontitis* from actual injury or from extraneous deposits which predispose to mechanical irritation and subsequent infection with serious consequences, because of the exposed position of the periodontal structures and their

frequent liability to irritation from food incursions over the teeth in mastication. We can have *infectious periodontitis* from both external and internal sources, which may produce serious involvement of adjacent tissues and bad systemic conditions. We may also have what might be termed *idiosyncratic periodontitis*, caused by temperamental, inherited, or acquired systemic diseases, such as rheumatism, neuralgia, tuberculosis, scrofula, anemia, etc. This class of periodontal diseases is most difficult to treat, and cures are made permanent only by persistent prophylactic attention. This classification, as may readily be seen, is capable of expansion to meet every known general pathologic condition, and may be subclassified to identify any particular condition with a modifying term that will make known, without quibbling argument, the exact condition under consideration. I shall not now try further to apply or justify this nomenclature, but hope you will investigate and use it for yourselves, and I believe that you will have greater satisfaction not only in diagnosing the many stages of "Riggs' disease," but will meet with better success in applying the proper remedy at the proper time.

My reason for writing a paper on this subject in a purely technical way is not only because your committee has asked me to do so, but because I find that although the successful treatment of this disease has been conclusively demonstrated by a few practitioners, the majority of even our best practitioners are not giving to it the attention which its importance deserves. Peridentitis is an inexcusable disease, and yet, next to dental caries, it is the most serious dental malady which afflicts mankind, and it also is indirectly one of the potent causes of many obscure and baffling systemic diseases. All ages and conditions of our patients require either the active rescue form or the preventive treatment of this disease. The physician does not recognize or consider it as a factor in his work, and few are the practitioners who are doing all that should be done for their patients. Much encouraging work, however, has been done in an educational way.

In the following a small contribution will be offered in the way of a word picture and practical demonstration of some technical methods which I have gathered from every source at my command, few being original with myself, that I may increase my own knowledge and disseminate what I have found to be useful. For purposes of clearer presentation I would treat the subject under two headings—first, what I would term the “preventive” treatment, and secondly, what I have called the “rescue” treatment.

#### **Preventive Treatment.**

Under preventive treatment I wish to describe the technical methods of oral prophylaxis as applied to children's teeth, which may, however, with suitable modifications, be used at all ages. This didactic form of statement has been chosen

because it will help to eliminate many personal references.

#### **FIRST DENTITION.**

I am convinced that prophylactic interference making for good teeth should be considered if not applied at the earliest possible period, which ordinarily should be at the time when the first teeth emerge from the gums. Elsewhere I have shown that a prophylactic consideration of the prenatal history is highly important, but for our present purposes the consideration of the first dentition will suffice.

Mothers and nurses should be instructed as to a suitable prophylactic mouth toilet and as to the importance of training the child to form a habit of brushing the teeth properly at regular and stated periods. This we all do when we think of it, or have our attention directed to it by a question from the mother. It should, however, be made a matter of consequence and principle of practice with every dentist to insist on this matter, with his regular patients at least. We find that this practice becomes a much more important matter when the dentist precedes it by a close personal inspection and a thorough professional ministration which puts the teeth in the best possible form to be easily cared for by the patient himself.

There is no good reason why children should not be under the dentist's supervision during the entire period of eruption of their deciduous dentures, as slight attentions at this time may be far-reaching in subsequent results. A slight operation, easily made by a dentist, would greatly facilitate dentition and lessen the child's suffering, or a slight orthodontic interference would insure normal occlusion; but professional interference



should certainly begin not later than the completion of first dentition.

There remains attached to every deciduous tooth after its emergence from the gum a tough membranous remnant of the calcifying organ, which in time is lost by the friction of food mastication. If the fissures are deep and not well calcified we soon find a line of pigment in the coronal sulci, which in time degenerates and furnishes an ideal culture medium and focus for beginning caries. The interproximal and other surfaces are likewise covered with this organic membrane, and if so located as not to be disturbed by the food incursions in mastication, they sooner or later offer every inducement for carious decalcification. Green or brown stains are frequently found on the labial surfaces of the incisors. All surfaces of every deciduous tooth should be freed from such organic tissue as can be practically removed, and these surfaces should be polished so that there will be the slightest possible opportunity for carious invasions. The cleansing toilet applied by the patient can then be so effectively carried out as to prevent extraneous deposits. All interproximal spaces should be watched for incipient caries, and, when noted, carious portions should be excavated and filled immediately with the best adapted insoluble filling material, so as to not interfere with the growth of the arches. The silicate cements, amalgam, and gutta-percha are useful materials. All fissures should be carefully isolated with the dam and carefully desiccated, and then sterilized with a strong disinfectant, such as 5 per cent. mercuric chlorid in hydrogen dioxid. After the cavities are again thoroughly dried, a thin mix of oxyphosphate or copper cement should be worked into every part of the fissure.

Periodical polishings of the teeth should be determined by the patient's health or habits; accidental conditions also render more or less frequent inspections necessary. The importance of a close surveillance at this time is a most essential factor in successful prophylaxis, and no fixed rules as to the intervals of inspections can be made. Every individual patient should be treated as a special case until a fixed toilet habit is assured, and as frequent inspections should be made as may be indicated by the health or habits of the patient. Some patients may need monthly inspection, while others, because of good health and their own interest and attention, can safely be allowed longer periods. So little time is ordinarily needed that frequent inspections are preferable, as this affords opportunity to detect unfavorable conditions, and to make immediate corrections under the most favorable circumstances. It is better to have some systematic method of summoning these patients by letter or telephone message, for so long as they are experiencing no dental inconvenience they are liable to forget or minimize the necessity for a visit to the dentist. If such a course is carefully maintained throughout the life of the deciduous denture, there can be little doubt of the result. The child should reach the permanent dentition without the loss of a single deciduous tooth or of its full function, and provided with the space needed for the proper emergence of each permanent tooth. While I am not prepared to make these statements on the basis of actual experience, yet logical deductions from past experiences under conditions of a less systematic procedure have given me the strong conviction that no deciduous tooth need be prematurely lost or incapacitated, except from serious acciden-

tal or uncontrollable causes. In other words, it is a shameful neglect on our part that we permit the present degenerate condition of children's teeth.

#### SECOND DENTITION.

We come now to the most important period in preventive treatment, the period of second dentition. While this is the most important period in the child's dental history, it is the one usually most neglected. If the orderly regimen indicated above has been faithfully maintained, its continuation with some additions during the period of second dentition will be easy and attended with still more gratifying results.

The most important maldevelopment usually encountered at this time is delay or malposition in the eruption of teeth. Typical alignment of the teeth is such a rare occurrence that we make models and pictures of such cases to show them at dental conventions as curiosities, while the established type should in all cases be normal, and could be so if proper professional care and needed interference were applied at the proper time. We have too many professional orthodontists and not enough general practitioners who are giving the needed attention at a time when it would count most in preventing these unfortunate malformations. Malocclusion is another result of professional neglect that is censurable rather than commendable, as it is practically preventable by proper care of children while their teeth are erupting. I cannot take time to describe in detail the specific treatment, but I am convinced from a long personal experience in the orthodontic treatment of children that the dental practitioner is responsible for a large percentage of the

cases of malocclusion we see. In most of these cases very simple treatment at the proper time would be sufficient. I find that most dentists tell their patients that teeth which are evidently in improper positions will in time be forced into their proper relations by other emerging teeth. The main trouble is that most dentists are too easily satisfied, and do not place sufficient importance on exact occlusal relations in every instance. They have not learned that the effectiveness of the masticating apparatus is dependent on its exact correlations. It is true that the versatile movements of the mandibular arch permit of some variation with a reasonable degree of functional effectiveness, consequently many dentists are satisfied to let the denture alone, until disease attacks the teeth and their surrounding tissues, and they are then forced to conclude that what was a very small abnormal condition in the child has developed into a serious if not incurable impairment of function. And as the teeth begin to be lost, the trouble increases disproportionately to the apparent conditions. Malocclusion of the teeth is responsible for diseases of the periodontal tissues more than any other cause to which we are now attributing it. Any endeavors, therefore, to combat this disease and obtain permanent cures, while malocclusion exists untreated, will certainly prove disappointing. I therefore plead especially for early interference to bring about the eruption of every permanent tooth in its proper place and relationship as one of the greatest factors in preventive dentistry.

As the eruption of the permanent teeth extends over a period of ten years, we have to carry the child through this most important period of dental history. Typ-

ically the teeth are, fortunately for us, generally well developed, but structurally they are liable to considerable variations. If the health of the mother has been good, and a good system of prophylactic hygiene has obtained during the formative period, we should expect good if not ideal tooth tissues, and because of the maternal good health the periodontal tissues should be well developed, and have sufficient vitality to resist ordinary disease encroachments. We are not yet in a position to affirm that the hard tissues of the tooth suffer atrophic or degenerating changes after formation; but we know that the teeth seem to have periods of immunity, and other periods when caries seems to prevail with no apparent cause. There can be little doubt that the periodontal tissues are always subject to systemic influences, which render them more liable to disease attacks. Our experience in this connection leads to the conclusion that teeth in normal occlusion are less liable to carious attacks if they are kept clean, even though they seem structurally inferior, and that the surrounding tissues are less liable to infection or degenerative diseases, probably because of the individual's more vigorous mastication producing normal trophic stimulation, and also consequent freedom from extraneous accumulations on and about the teeth, which are liable to start irritations of the soft tissues that become pathologic from subsequent infection. For this reason we would insist on absolutely normal alignment and occlusion, with freedom from carious conditions that prevent the utmost freedom in the use of teeth in accordance with natural functions.

The prophylactic treatment of the youth is quite similar in its detail to that of the child, and need not be described

again, except to say that it requires adaptation to individual conditions.

If a child has been brought up under prophylaxis treatment, he reaches the period of permanent dentition with the prophylactic habit established, yet because of the shedding of the deciduous teeth and their slow replacement by the permanent teeth, which is sometimes attended with a great deal of irritation, the gum environment is not always in a healthy condition. If conditions due to this cause exist, active remedial work should be instituted until all irritation has been overcome. If the pulp of a deciduous tooth suppurates before the time when this tooth should be normally shed, it should be treated, and the tooth environment rendered sanitary and useful. If this is not practicable, the tooth should be extracted, and a suitable brace between the adjoining teeth inserted to maintain the space if any considerable time must elapse before the eruption of the permanent tooth. Simple Magill bands with a wire between is all that is needed; these bands are easily made and applied. In case of retarded eruption this procedure is imperative, and in some cases it should be more durably constructed, and of such form as to permit of adjustable expansion. The polishing of the teeth as soon as they are sufficiently erupted, and the filling of deep fissures and incipient carious cavities with suitable materials, should be attended to in the same manner as indicated above for the deciduous teeth, until such time as complete calcification will render more durable operations practicable. In malformed teeth resulting from interrupted calcification, it is desirable at as early a period as practicable to dress off all irregularities that may render cleanliness difficult. If pits or cavities are present on the crown sur-



faces they may be ground out and polished thoroughly so as to present a dense and smooth surface. If these spots are sensitive, they should be treated with applications of silver nitrate, and polished until they can be ground out to self-cleansing form. This will be difficult in some cases, as on the occlusal surfaces of the first molars, which often erupt with only sharp spines of enamel projecting from the uncovered dentin, which is hypersensitive. If the rubber dam can be applied to such teeth, they should be isolated and disinfected with warm hydrogen dioxid, dried, and a liberal application of a 20 per cent. solution of silver nitrate should be made for a few minutes; all excess should be removed, the tooth dried, and thin copper oxyphosphate cement flowed in about the rough surfaces. If caries has already attacked the dentin, this treatment may cause some pain, but it should not long persist, unless caries has already made considerable progress. In that case a more palliative dressing should be used temporarily, the object being to prevent all progress of caries until such time as the teeth are completely calcified and will tolerate more durable operations. In these defective molars it is highly desirable that they should be built up to occlusal form, and be freed from all irritation of mastication as soon as practicable, as their own development and that of the alveolar structures, as well as the mandibular process, are dependent on their individual activity in mastication. As soon as the crown of a permanent tooth appears above the gum, the prophylactic polishing should be instituted, as this will protect it from caries and hasten materially the proper development of the tooth. This polishing stimulates the

functions of the tooth itself and of the periodontal structures also. It will be noticed that the tooth assumes a clearer appearance, and the gum tissues recede to their normal size and take on a beautiful pink color, indicating health and resistance to mastication and disease.

This in most cases is the period for orthodontic interference, which should be of a persuasive and preventive character if possible, rather than that it be delayed to a period when active and complex interference becomes necessary. Expansion for space is the keynote to preventive malocclusion. If the space required for each erupting tooth is provided, there is small chance for malposition except in torsal relations. Crowded conditions occur usually in the incisal and bicuspoid regions, and the torsal positions taken by the teeth are due to their axial rotation owing to pressure caused by the canines forcing their way into a smaller arch than is normal. The preventive treatment is best made by expanding the deciduous arches before the teeth begin to loosen, which is easily accomplished by a soft wire placed between the canines, this wire to be elongated once a week by pinching it with pliers; or an expansion arch may be placed on the molars, and the lateral teeth attached to it. Other simple means of accomplishing this are easily available and practicable for the general practitioner. This treatment should be done carefully, as it is many times ill-considered, and so inartistic results are obtained; but it is not necessary for a practitioner to possess all the skill of the specialist to accomplish desirable results. When the teeth are all erupted and in normal occlusion without material structural loss, it should not be a serious problem to institute a systematic pro-



phylactic regimen that shall prevent the usually rapid progress of caries from this period to and past the age of maturity.

From fourteen to twenty-five years is another crucial period. During this time the teeth generally suffer so much from caries that they are greatly weakened structurally, and much repair work is required. As this work is often faulty in character, conditions favorable to diseased root environment become prevalent at the age when calculus deposits on the roots prevail. Between the ages of twenty-five and forty, a period of considerable immunity to caries should and undoubtedly would intervene, if the teeth at its beginning were in condition to withstand the hard usage and neglect incident to this period in the strenuous lives of our business men and of women who are rearing families. As a preparation for this important and strenuous period, we should lose no opportunity to preserve the teeth in the most perfect condition possible. All filling and other restorative treatment should be of the most perfect and durable character that our art and skill can produce. At the same time all restorations should be made with reference to the maintenance of healthful conditions by the patient through a continuance of proper toilet regimen. In this day, when so much public agitation for oral hygiene is being made, it devolves upon the dentist to enlighten his patients on the subject of clean teeth. All sorts of tooth-powders and mouth-washes are being used with little discrimination, and much harm will result from this source unless the mouths of our patients are carefully watched. We must prescribe not only the toilet implements, but instruct patients in their use, and change them as indications warrant. The same tooth-powder is no more

to be depended on continuously than the same soap for washing the face. Differing conditions require prompt and effective changes in methods and materials. We must induce our patients to present themselves more frequently for inspection and advice, and by these more frequent services we shall be able to prevent the major operations now so common.

#### **Rescue Treatment.**

We are now prepared to consider that phase of oral prophylaxis treatment which has to do with restoring to functional use teeth that have degenerated, particularly as to the structures which support and nourish them. Past efforts to find a satisfactory name for this class of diseases have resulted in failure, because no one name is sufficiently comprehensive to include all the different stages of disease, or the varied causes and pathological conditions encountered. These diseases have been considered to be infectious and of purely local origin by some, or as a local expression of a systemic disease by others, and many theories, too numerous to be discussed here, have been offered in explanation thereof. We shall treat some of the most prominent symptoms or manifestations from a purely surgical or local viewpoint.

#### **CERVICAL PERIDONTITIS.**

The simplest form of such disease may be considered under the general head of traumatic peridontitis, with the symptomatic title of *cervical peridontitis*. This will suggest inflammation of the soft tissues at the cervical part of the tooth, involving the gum and pericemental tissues at their anatomical union. This is the usual beginning of more

serious encroachment on the deeper structures, and is caused by some mechanical irritant, either a calculary or a mucoid deposit on the cervical part of the tooth. It may affect patients of all ages, although it is more common in those of forty or more years. It may appear in persons as young as fifteen years where there is lack of proper care or the patient is afflicted with some systemic disease implicating the nervous control of the salivary secretions. If the deposits are of the mucoid variety or the calculary deposit is very slight, it may be due to a vitiated secretion from the mucous follicles, which exerts a corrosive action on the tooth cervix, causing a roughness which favors the deposits. The treatment of this form of peridentitis is wholly surgical, and consists in removing the deposits and smoothing the abraded surfaces of the teeth. Ordinary scaling of the teeth is followed by careful polishing with wood points in suitable porte-polishers with fine pumice wet with phénol sodique, or other good abrasives with disinfectant remedies. In places inaccessible to the polishing points, ribbon floss silk impregnated with the abrasive may be used effectively. A delicate sense of touch must be acquired to use these polishing agents so as to be able to determine when the polishing should cease, as it is impracticable in most cases to see what is being done, because of the presence of the saliva, or blood in some cases. After the polishing is done, the parts treated should be thoroughly irrigated or sprayed with an agreeable antiseptic solution, and an anodyne and healing lotion applied locally. Care must be exercised to prevent grave injury to the gum margins by the instrumentation or polishing agents, and cauterant or destructive remedies are not indicated.

A lotion composed of equal parts of tincture of iodine, aconite, and chloroform makes a soothing and healing application applied by means of a pledget of cotton on the gum over the region treated. Other similar remedies are also effective, as there is usually no extensive lesion or infection. It is important, however, that only so many teeth should be operated on at each sitting as can be completed, because of the danger of infection and probable recession of the gums by repeated surgical or remedial irritations. After the gums have been reduced to a normal condition the teeth may again be polished, but no operation should be made that would injure the gum unless deposits still remain. It is much better to be thorough at the first operation than to attempt to treat many or all of the teeth.

#### PARENCHYMATOUS PERIDENTITIS.

*Parenchymatous peridentitis* is another form of this disease, in which quantities of calculary or other deposits may not be noticeable on the teeth. There is no general pus flow, but deep pockets caused by a separation of the peridental structures from the roots, forming constricted sinuses that are usually filled with a fluid of the character of a thick serum. The gum tissues are plethoric and exceedingly sensitive, bleeding copiously when injured. The alveolar process and periosteum also seem to be involved. Patients object to using the tooth-brush because of the pain and bleeding of the gums.

Great care must be exercised in scaling the roots of these teeth, as the gums are painful and the roots sensitive. Delicate scalers that will penetrate the sinuses are required, such as the Tompkins scalers and the Carr planing instruments. The polishing can best be done with slender

bamboo points, with which the abrasives may be carried into the deep pockets. If the sinuses are much constricted and the deposits difficult to remove, an application of ammonium bifluorid, as suggested by Dr. Head, may be made three or four days previous to the operation, with good results. The sinus should be washed out carefully with a warm antiseptic solution, and a drop or two of ammonium bifluorid deposited in its most dependent part by means of a suitable syringe. This will loosen the membranous attachment of the calculus, and render its removal much easier. At the same time the bifluorid solution produces a sedative action on the tissues. Dr. Head claims that it really extracts calcium salts from the cellular membrane, and thus relieves the irritation. Whatever may be its action, it certainly is efficient in allaying the acute inflammatory condition. In some cases I have thought it undesirable to risk the introduction of the insoluble abrasives into the pockets, and have had good results from using Head's remedy, or lactic acid, on slender bamboo points, simply saturating the points with the remedy and rubbing the root surfaces with them. Neither of these remedies should be used excessively in this way, or too frequently, as they will produce undesirable pain and irritation. These conditions will need several treatments to bring about complete results, and are liable to recur unless the patient is faithful in brushing and massaging the gums.

A condition quite similar to that described above is often seen, in which there seems to be more calculary deposit on the roots and less sensitiveness of the gums, which, although enlarged, seem to be hypertrophied rather than inflammatory. This condition is always found in the mouths of patients beyond forty years of

age, but I have seen the former in a lady of twenty-five. The former I have considered as acute parenchymatous peridentitis, while the latter I have named chronic parenchymatous peridentitis. The chronic condition may be treated in the same way as the acute, except that the deposits are very difficult to remove, but the sinuses are usually more open, and the tissues less sensitive. In chronic cases I have found the lactic acid more useful than the bifluorid of ammonium, as it not only softens the calculary adhesions, but destroys the infected membranes and excites the circulation to bring about the repair with less irritation.

#### SUPPURATIVE PERIDENTITIS.

The next and perhaps the most common form of this disease I have named *suppurative peridentitis*, and it corresponds to what is usually called true pyorrhea alveolaris. In this form more or less pus flow is always present, and all degrees of calculary and mucoid deposits. We see it in all ages from sixteen to eighty years, but it is commonly a disease of adult or old age. It may be acute, but is usually unnoticed until it becomes chronic. It is undoubtedly infective, but not specific, although it may be both. It does not seem to spread in the mouth like an infective disease, but more like a contagious disease, in its own peculiar method. If severe, it ranges from involving a few to all the teeth in the mouth, and from gingival suppuration to complete exfoliation of the teeth and necrosis of the alveolar process. It may run a rapid course, but it usually proceeds slowly. Sometimes a large calculary deposit of the softer variety is present, in other cases a smaller deposit but of the harder variety is noted. The



soft tissues are usually not swollen nor highly sensitive. The treatment first of all consists in thorough scaling of the roots and curetment of the sinuses. In severe cases, this requires heroic and painstaking operating, as all seriously infected tissue and alveolar bone must be removed. Keen judgment is needed to decide in some cases whether or not badly involved teeth should be saved or extracted. As a rule, a tooth with at least one-third of its roots embedded in healthy tissue should be saved, while in some cases a tooth, owing to its importance, may be saved, even though a less secure attachment is present. The possibility of steadying such teeth by attaching them securely to adjoining teeth will usually decide such problems. In some cases hopelessly involved teeth may be extracted and replanted successfully, if the alveolus will support the implanted tooth. It is desirable that every tooth should be saved that can be rendered serviceable, but we are not justified in taking risks that are likely to fail, or that, at best, promise incapacitated function, as a patient will avoid using any part of the mouth where there is a feeling of insecurity or tenderness, which of course is fatal to our ideals of complete function, and in time all the teeth in that part of the mouth will suffer degeneration from lack of use. The possibilities of replacing lost teeth with modern bridge and plate restorations give us a range of choice that formerly was impracticable. The age or physical condition of the patient should control to some extent the decision, as in old people, or those suffering from debilitating diseases, the repair processes are insufficient, and ordinary results cannot be expected. In fact it is a question whether operations in some cases should be attempted at all

in patients suffering from endarteritis, diabetes, and similar debilitating diseases, because of the dangers from infection.

#### **General Principles of Treatment.**

In all cases a thorough irrigation of all sinuses to be operated upon with a sterilizing solution is an essential preliminary, and in cases of probable infection several preparatory treatments should be given in conjunction with a rigorous mouth toilet by the patient. The surgical treatment involves a thorough scaling and smoothing of the root surfaces and the curetment of the necrosed alveolus.

*Instruments.* The detail of design of the instruments and their use is so large a subject that we cannot take it up here. As the operative field is not visible, it is essential that all instruments shall be of such character as to enable the operator to grasp them lightly so as not to impair the delicate tactile sense. I find a specially knurled aluminum handle of the penholder shape fitted with cone-socket points best adapted for this purpose. The shanks should be curved on the contra-angle principle, when of that form, so as to bring the cutting blade in line with the axis of the handle; otherwise it is necessary to grip the instrument so firmly as to lose delicacy of touch. A large variety of instruments is needed by the specialist who undertakes to treat difficult cases, but a set of scalers and files can be judiciously selected from those on the market so as to meet the general practitioner's needs. The main feature is that these instruments must be kept sharp to render possible effective work with the least fatigue and pain to both patient and operator. No



good work can be expected from ill-adapted and dull instruments in the hands of a clumsy or heavy-handed operator.

*Short sittings.* It is important that only as many teeth as can be finished at each sitting should be treated. A good method is to treat the interdental spaces—that is, the two approximating root surfaces with their lingual and buccal connecting surfaces, and only as many of these as can be completed at each sitting. As this work is painful and fatiguing to the patient, it is much better to make the sittings short.

*Anesthetics.* The use of anesthetics is an unsolved problem. Injections are effective, but so transitory as to make their use inadvisable, especially since they hinder prompt healing. In painful conditions they are necessary. Local applications are of little value, as they are not readily absorbed, and consequently inefficient. If made strong enough to have a chemical effect the reaction is detrimental to the healing process.

*Scaling.* In some cases, where the root surfaces are exceedingly sensitive owing to the action of corrosive pus or serum, disinfectant treatment with two or three applications of the ammonium bifluorid by means of wood points and rubbing the sensitive surfaces carefully will loosen the attachment of the calculus, rendering the scaling more tolerable for the patient. In scaling the roots it is necessary that all deposits of calculus and all remnants of dead membrane should be removed. At the same time it must be borne in mind that the cementum is very thin, and if it is removed the exposed dentin will be exceedingly sensitive and may interfere with the soft peridental tissues consolidating around it. In extreme cases it is sometimes advisable to remove

the pulps from teeth that are so sensitive as to prohibit effective scaling.

*Polishing.* After scaling, the polishing of the root surfaces, especially at the cervical margins, is a very important procedure. The polishing should be carried as far into the sinuses as possible without encroaching on the soft structures or carrying the abrasive material into these tissues, which will prevent healing. The constant use of a suitable and warm antiseptic solution injected with only moderate force with small syringe points is a great relief to the patient; it clears the operative field, and prevents the impaction of loose débris in the soft tissues. The curetment of the alveolar margins can be done with chisel and spoon-shaped excavators, and sometimes with engine burs, but the weight of the engine hand-piece renders delicate touch difficult.

*Splints.* Splints of almost innumerable kinds have been advised, and in many cases are necessary until the peridental tissues are sufficiently healed to maintain themselves. It is preferable that the teeth be allowed the usual freedom of motion, as the peridental tissues will assume their normal function sooner and more permanently. For temporary purposes we find the brass ligature wire as used by orthodontists most valuable. Waxed silk thread woven about the adjacent teeth and attached at favorable points with cements is also convenient and satisfactory. Permanent splints with bridge work are often needed, and their construction should always be carefully planned to render possible the polishing of the cervical portion of the roots. Fixed bridges are more serviceable than the removable types, and afford better support to the attaching teeth. This is another subject too large for us to present here, but it is one of very great importance,

especially in those cases in which some teeth have been lost and others need permanent support. The correction of all malocclusions is very essential, but not a difficult problem usually; a temporary opening of the bite for a few days will often render the grinding of the cusps unnecessary.

*Medication.* Medication in the minds of many is essential to the cure of this disease. Almost every therapeutic agent known to medical science and which could by any possible stretch of the imagination be utilized has been suggested, but we have mostly to record disappointments. Most of those seriously considered have some merit, but only as adjuncts to preliminary surgical treatment. This is another important phase of our subject that I shall have to leave out. I have had such unsatisfactory results from the purely medical treatment that I personally make little use of drugs, except as far as they assist in surgical treatment. As solvents I value lactic acid and ammonium bifluorid for

their detergent and stimulating reactions; phenol-sulfonic acid for its solvent and stimulant action on necrotic bone; phénol sodique for its alkaline detergent action; sulfo-carbolate of zinc or zinc chlorid for their astringent and stimulant reactions; iodine for its metabolic influence; silver nitrate for its escharotic and protective action. As an antiseptic irrigating solution I use principally the liquor antisepticus of the U. S. Pharmacopeia, or cinnamon water with zinc chlorid, or zinc sulfo-carbolate in two to four per cent. solutions. These drugs meet practically all the requirements of this active rescue treatment, but should not exclude other effective remedies when indicated.

I find this subject so large that it is difficult to present its technical features briefly. I trust that you may be able to sift out of this long paper some item that may be helpful in the practical prevention and treatment of this most destructive disease.

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### DISCUSSION.

Dr. L. C. TAYLOR, Hartford. This gentleman from the far West has spoken upon a subject in which we here in New England have taken a vital interest from the time when I first entered the dental profession. He has traced this disease from its incipient stage in deciduous teeth to advanced life, or to what he terms advanced pericementitis, which we formerly called Riggs' disease or pyorrheal troubles.

I am getting tired of treating advanced pyorrhea, but believe in treatment of the early stages of pyorrheal troubles. I am interested in all stages of this work, but consider it a grave mistake to wait until the patient is forty years of age before beginning this treatment.

In speaking of inherited peridentitis, the essayist refers to rheumatism and many other of the inflammatory disorders, stating that these yield only to

persistent prophylactic treatment. Webster defines the word prophylactic as a noun and an adjective, meaning a medicine which preserves or defends against disease, and the same definition is given in the Standard dictionary. Prophylaxis is a noun, meaning the art of guarding against, preventing disease; observance of the rules necessary to preserve health; preventive treatment. I believe the essayist intended to convey to us the meaning of what I would term prophylaxis, the surgical or manipulative treatment for the preservation of health, and not the rinsing of the mouth from time to time with medicine in the expectation of establishing the health of the mouth. I criticize his use of the term, as I believe he means prophylaxis when he says prophylactic.

He says that peridentitis is an inexcusable disease and next to caries the most serious of dental diseases. That is true, but we often see peridentitis in mouths in which the festoons have become elongated, although the teeth are perfectly clean, so that nine out of ten practitioners would declare that mouth to be perfectly healthy. Rheumatism is very commonly observed as the result of the toxic effects of faulty mastication. Whenever a slight elongation of the festoons is noted, an irritant to the stomach can be discovered on close investigation, with the pernicious effect of rheumatism.

The essayist speaks of green or brown stain, saying that the deciduous teeth should be freed from such organic tissue, and the surfaces polished. That is grand doctrine and I would that every practitioner would believe it, but I do not believe that our friend or anybody else can do it by prophylactic treatment. We will have to remove the cause. Medicine is all well and good as a disinfectant

sometimes, but beyond that it produces little effect. Nine out of ten of all diseases of the stomach are due to mouth conditions, for which we as dentists are responsible. One-half of the doctors' bills today could be wiped out by proper care of the mouth. It is our duty to care for the mouths of children, and to instruct the future women and men in the proper care of the mouth.

The essayist speaks of sterilizing and filling teeth with copper oxyphosphate. I do not believe that copper oxyphosphate or any copper combination should be introduced into the mouth in any considerable amount, because it is a nasty material, and the same results can be obtained without its use. In many cases of children of from six to eight years, in whom the sulci of the teeth were becoming defective, and who were very nervous, I have simply wiped the surfaces with alcohol, cleaned the surfaces as well as possible, thinly mixed some amalgam and cement, placed some of that mixture on top of the tooth, placed a little dry amalgam over that, pressed it in with a finger, and smoothed the filling off. These cases are still in very good condition and need no care.

I have very little use for what is called inspections. I believe an appointment should be made outright for systematic prophylaxis treatment.

The author speaks of malocclusion being responsible for many of the diseases of the periodontal tissues. That is true, yet if these children are subjected to thorough prophylaxis work—I do not mean prophylactic treatment—and the periodontal tissues are stirred up, thereby securing a physiological betterment, a very large percentage of these cases will resume a healthy condition. I have here two models of children's teeth [demon-

strating] which in their parents' opinion were in a hopeless condition. I persuaded these parents that their children could be cared for. Consequently they were given into my care, and the models demonstrate the results obtained—in one child at the age of fourteen and in the other at the age of twelve—by prophylaxis and half a dozen fillings.

The essayist says that the prophylactic treatment of the youth is quite similar to that of a child. What does he mean? Does he mean continual medicinal treatment? I believe in prophylaxis treatment from childhood on, but not in medicinal treatment. The best results are obtained by prophylaxis treatment, because the patient comes to maturity with the hygiene habit well established.

The age from fourteen to twenty-five is another crucial period. During this time the teeth generally suffer so much from caries that they are greatly weakened. This is an abnormal condition, and may be traced to the high schools. A child who is living in leisure and without excitement may escape this abnormal condition, but a child in school is subject to abnormal conditions. The passage from childhood to manhood and womanhood is a critical period. School children are living under a nervous strain, and I do not doubt that many a child who presents excessive caries owes it to our abnormal educational life.

The essayist next states that fillings should be made of the most perfect materials. In my opinion nothing can surpass the combination of our oxyphosphates, which are clean, healthy, and wholesome, and possess an adhesiveness that can never be obtained by a malleted gold filling. Gold, in my opinion, should be set into the teeth in cylinders, allowing cement to come between the gold and the

tooth tissue, whereby an absolute adhesion is obtained with high preservative qualities such as could never be obtained with gold alone.

In the essayist's opinion cauterant or destructive remedies are contra-indicated. May I ask what he would do with receding gums in a young lady's mouth? Frequently in patients of twelve, fourteen, or fifteen years of age the gums are noted to begin to recede from the teeth owing to one cause or another. In these cases I am wicked enough to dip an orange-wood stick in aromatic sulfuric acid of full strength and go around under the gum, which will assume a white appearance. In some young patients whose gums had receded to nearly one-third the length of the root, I have been able to establish a normal condition. I have one lady patient whose mouth Dr. John M. Riggs, in 1875, pronounced to be in such a diseased condition that it would prove fatal to the teeth in five years. Today the formerly receded gum is covering a lower tooth half-way up, owing to the use of aromatic sulfuric acid and to keeping it polished and cared for, and her teeth are in better condition today than they were in 1875. This woman is now sixty years old. In such cases of advanced age results cannot be depended upon as well as in young patients.

Dr. J. W. HARPER, Hartford. Dr. Taylor confounds the meanings of the words prophylaxis and prophylactic, and does it every year. He says that Dr. Hoff did not use the word prophylactic correctly. Prophylaxis is a noun, and he speaks of prophylaxis treatment, which is not right. He means prophylactic treatment. The syllables *-ic*, *-al*, and *-ary* are suffixes derived from the Latin, meaning pertaining to, relating to, or



consisting of. Therefore prophylactic means that which pertains to prophylaxis. Prophylaxis is the noun, and prophylactic is the adjective.

Dr. A. C. FONES, Bridgeport. I consider Dr. Hoff's paper most excellent, and the only exception that I can take to his remarks concerns malocclusion as causing conditions of peridentitis more than anything else. In that I disagree with him most decidedly. A tissue can be rendered susceptible to peridentitis by conditions of malocclusion, but these will not produce peridentitis to the extent that he claims.

Life is dependent upon three factors, air, water, and food—that is, clean air, clean food, and clean water. The proper quantity and selection of food and the manner in which it is injected, on the one side, and cleanliness on the other side, form the foundation for health. Germ life is omnipresent. Bacteria are found in all the land, in the fields, in the blades of grass. The only place where they are rare is in mid ocean and on the mountain-tops. Plant life must have germ life in order to get its food. Germ life without some ferment is harmless; it is the product of germ life that is harmful far more than germ life itself. On this observation cleanliness is based. Any room that is well swept and kept perfectly free of dirt and supplied with pure air will be sanitary, but if fermentable substances are thrown on the floor and allowed to decompose, they will render a room uninhabitable and become a source of infection and disease in twenty-four hours. Mouth conditions are identical.

I have discarded practically all drugs in my practice. I say this with conservatism, advocating this one principle, that in a mouth without suitable pabulum

upon which to thrive, bacteria become harmless, and disease is eradicated. If food débris is removed so that bacteria cannot produce toxins, prevention can be effected. People commonly speak of bacteria being distributed through the mouth into the stomach and intestines and carried into the blood. It is not the bacteria that are carried into the blood, but it is the product of these bacteria that is distributed from the mouth into the intestines and carried into the blood. A child in school suffering from malaise, headaches, eye-strain, and displaying the lack of energy inherent to such disorders is not suffering from bacterial invasion of the blood, but from the absorption of bacterial products in the mouth that are carried into the stomach and intestines and into the blood. Dr. Kirk in a paper illustrates the case of a healthy child who was brought up on the bottle, the milk and the bottle being sterilized, but no attention being paid to the child's mouth. This condition was allowed to persist, with the result that the child had colic. A film of fermentative milk was left in the mouth, and the fresh milk passing over that film was infected, fermentation took place, gas was produced, and colic resulted, whereas, if the mouth of the child had been swabbed out previous to the feeding, there would have been no colic. The same principle holds good with every one of us. We may be taking pure food, but we may saturate it with bacteria, causing fermentation and producing gases which bring about injurious results. Physicians concede that no doubt a large percentage of disease that they are called upon to treat is due to unsanitary mouths.

The essayist in his technical treatment of periodental disease thoroughly appreciates every detail in bringing about a

sanitary condition of the mouth. The basic principle in prophylaxis is that, since bacteria are harmless when deprived of proper pabulum—and bacteria cannot be eradicated in the mouth—if pabulum and bacteria are separated, a healthful condition will result. Not the bacteria, but pabulum can be eradicated by keeping every surface of the teeth so clean and thoroughly polished that there is no place for the food to lodge. Oral diseases can be prevented for an indefinite period if every tooth is placed in a smooth, healthy condition so that the patient can remove all food débris. Prophylactic treatment is only one-quarter of the treatment, the other three-quarters the patient has to do himself by his daily mouth toilet. I have no confidence in the treatment of Riggs' disease, especially of the acute variety, unless the patient thoroughly co-operates, especially by brushing his gums. Gum-brushing is a hobby of mine, but I am getting such satisfactory results from it that I am trying to spread the glad tidings. I have heard dentists speak of patients who had deep-red gums. Deep-red gums are not healthy, but have a sluggish circulation. Pink gums indicate a rapid and perfect circulation, and that is brought about only by massage treatment and gum-brushing. Gingival disease is due to susceptibility on the one side and food débris on the other. The products of decomposing food débris are the exciting cause. Susceptibility may be due to various conditions; to some specific or any disease that has a tendency to produce lowered vitality of the tissues. Malocclusion plays an important part in that it prevents the teeth from performing their full function. But I believe that both susceptibility and an exciting cause must be present to produce the disease. I believe that there will be no decay if

there is no exciting cause, because we have all observed that the teeth decay in pairs. If a buccal cavity is found in the first lower molar on one side we are almost sure to find one in its mate on the opposite side. This is probably due to susceptible tooth structure. If so, how are we to prevent these troubles? By devoting our chief attention to the crown of the tooth from one up to thirty years. Dental disease prevalent in young people up to thirty years of age is almost exclusively localized in the crowns of the teeth, but from thirty years on, the point of attack changes to the root of the tooth, the periodontal membrane, and the other tissues surrounding the teeth. In order to combat susceptibility in adults as well as in children, we must stimulate the blood supply around the teeth, because after thirty years the current changes. In youth the tissues are very thick and vascular, and resist a great deal of filth without the teeth succumbing to it. In children with very filthy mouths the crowns of the teeth are often noted to decay very rapidly, while the roots of the teeth retain a healthy condition.

Dr. Taylor speaks of having observed numerous cases of children of twelve, thirteen, and fourteen years with receding gums. It is rarely indeed that I see a child or a patient under the age of twenty-five with marked recession of the gums, but after the age of thirty the membrane has changed; a lowered vitality and lowered resistance is present, and I believe that by securing a proper blood supply by proper gum-brushing the resistance of that membrane is so enhanced that it can be maintained in a state of health, but it must be done systematically. We are living under artificial conditions; we live sedentary lives. If we lived in the woods we should have no use for dentistry, but because we live in

artificial conditions we have to take care of ourselves artificially, and the problem is to find the simplest method by which to keep ourselves in a state of health under these artificial conditions. A man working indoors cannot eat the food that is suited to out-of-door workers, because he is not doing anything that requires enforced breathing, and does not take in sufficient oxygen into the lungs to burn up the surplus amount of nourishment.

I wish to speak particularly on the subject of gum-brushing. In order to raise the vitality of the peridental membrane, the patients must be instructed how to brush their teeth and gums. Three-fourths of the treatment, I believe, should consist in home treatment. It is the most difficult task to educate three or four hundred people in the proper care of the mouth. I have been discouraged in my attempts, but by grim determination I have succeeded, although this is very slow educational work. Some patients will grasp this lesson immediately, but generally it appeals only to refined and educated people who can intelligently appreciate the value of their teeth. I do not believe that the large majority of dentists take care of their mouths. You remember that Portia said that it is easier to teach twenty people what could be done than to be one to follow the teaching. Enthusiasm to have your own mouth in proper condition is needed if you would impart this lesson to your patients. You cannot inspire your patients with this enthusiasm if your own mouth is not in good condition. You must have some definite system as to how the mouth should be brushed. For my own part, I have tried cross-brushing and up-and-down brushing, and have finally adopted rotary brushing, and am obtaining beautiful results.

The ideal mouth-wash which I advocate is lime-water. The ordinary antiseptics, in my opinion, are of doubtful value, but lime-water dissolves all mucilaginous secretions between the teeth. It is the finest solvent I have found so far, and most effective for home treatment. A small brush should be used that is readily applied in the mouth, as a large brush is not as effective. In addition, floss silk and a dentifrice must be used, these—the brush, lime-water, dentifrice, and floss silk—forming the essentials for the patient's use. In my opinion eighty per cent. of the dental operations could and must be prevented by these means.

Contact points between all fillings are most important. There should be no places where food can impinge upon the gum and start absorption. All fillings must be smoothly polished so that the patient can easily remove food débris from them. All these necessary procedures form the basis for preventive treatment or prophylaxis.

Dr. C. W. STRANG, Bridgeport. About five o'clock yesterday a copy of the most excellent paper of Dr. Hoff came under my eye. This paper contains so much, covers such an extensive field, gives so many suggestions all of which are designed to prevent, if possible, any injury that might result from their injudicious application in practice—has so much depth and character and upholds so many ideals, that none inside of twenty-four hours could digest and comprehend and so thoroughly master it that he could discuss it intelligently.

While reading over the paper I specially noted several points, but in the discussion one after another of them has been taken up.

The suggestions contained in this essay are safe to follow, and Dr. Hoff is sincere enough to tell us that he has been for-



ging in other territory for some of the ideas he has presented. He does not claim that they are all original with him, but, when he finds a good method, he adopts it.

There is nothing in the paper that I would take exception to or antagonize, but some of Dr. Hoff's methods I would not care to follow, particularly at my age. I think that the general practitioner has shouldered enough care and responsibility that sap his vitality without having added to these the treatment of children of four and five years of age, and the correction of malocclusion or irregularities that it is safe to predict will follow unless certain conditions are eliminated. The specialist is better prepared to take care of these cases than the general practitioner, however skilful he may be ordinarily. There are exceptional operators, as we all know, who have the faculty of successfully treating children of four years of age, who, unless their jaws are expanded, unless their deciduous teeth are moved and brought into normal occlusion, will develop a complicated case of irregularity or malocclusion when their permanent teeth are erupted.

I have lived close to an orthodontist for a number of years, and know from observation that little children from four to six or seven years of age come to his office for weeks just for observation, to see what is being done for other children, and by and by these distant, timid, antagonistic children yield placidly to the hands of the operator without a whimper, without a tear, without objection. Little by little, step by step perhaps, a dozen pieces are cemented on their teeth, and the appliance inserted in due time, some five or six weeks being required for this work to bring about subsequently the desired results. Such care and responsibility I would not care to assume at my

age. I would rather concentrate my energies upon operating, and strive to equal the operations that were made thirty or thirty-five years ago.

I notice much material in the paper that the author could not have collected from books or dental literature, but only from experience. Experience is a school the rates of which are very high. Some of my experience has cost me, or somebody else, a large sum. Yet I would rather defray myself the expense of the knowledge and skill and ability that comes by experience that have it transferred to my *clientèle*. Preserve your vitality and your vigor in order that you may concentrate upon some specialty or other, and make the best of yourself! To express my thoughts more fully on this subject, I will quote a little poem that I read some years ago on "The Human Frame:"

The human frame, offspring of Heaven's high will,

Displays throughout inimitable skill.

In no part defective; none that perfect love  
Could prompt divinest wisdom to improve.

The eye, the ear, how wonderfully designed  
To serve as useful allies to the mind!—

The heart, that like a virtuous monarch  
reigns

And spreads delight through all his vast  
domains!—

The lungs, that drink the aerial flood,  
Imparting vigor to the vital blood!

To this great law, that governs every part  
And rules as perfectly in hair as heart

The teeth conform, and thus it stands confest  
That substance, form, and structure are the  
best

That wisdom could devise for such a use—  
And hence imperfect only from abuse.

Dr. TAYLOR. Dr. Harper suggested that prophylactic was a noun derived from the Latin. So far he is right, but he does not go far enough. It is both a noun and an adjective, and has been applied to medicine for more than two



hundred years. What does prophylaxis mean? It is of Greek origin, derived from a verb that means to "stand guard before." There should be a distinct meaning to our words, and prophylaxis I would define as the surgical and manipulative treatment for the preservation of health, and many physicians with whom I have spoken about this subject say that I am correct.

Dr. HARPER. Prophylaxis is derived from the Greek; I did not say it came from the Latin. I said distinctly that *-ic*, *-al*, and *-ary* are Latin suffixes, and that prophylactic is the adjective form which means pertaining to, relating to, belonging to, or consisting of prophylaxis. Take the word atmospheric, which means pertaining to the atmosphere. You use the adjective form with the *-ic* suffix, because you indicate something that pertains to the atmosphere; also hygienic as relating to hygiene. The word prophylactic is the adjective form which is used as referring to the noun prophylaxis. Prophylactic is strictly the adjective form with the *-ic* termination. At most, even if used as a noun, as in calling certain medicines or washes prophylactics, it is still, strictly speaking, an adjective qualifying the medicine or wash as to its uses and purposes, and referring to prophylaxis.

Dr. JAMES McMANUS, Hartford. We have been highly honored in having Dr. Hoff come such a long distance and read us such a delightful paper full of statements that are food for thought in the days to come. I have also enjoyed the discussion, especially that by Dr. Fones, because he has pointed out what you might call the ideal condition at which dentistry may arrive in the future. But at my age, after so many years of practice, I feel inclined to do like Dr. Strang. When we old practitioners take into con-

sideration the present status of dentistry, and realize that many of us have left undone many of the things we ought to have done, we can only hope that the young practitioners who are full of high ideals will retain them, although they will probably find difficulty in living up to the standard they have set. The great trouble which they will encounter will be that their patients will not lend their co-operation. That has been our trouble whenever we have tried to make progress. The patients have worked with us a little while, and then forgot to come back for a month, sometimes for six months, or a year. There is a hope, though, because this wave has swept the entire country, stirring up parents to give attention to this matter. It is stirring up one class which I think is of the utmost importance, namely, the school teachers. Our best starting-point is to stir up the teachers to educate the children to the necessity of their coming to school not only with clean hands and clean shoes, but also with clean mouths. They are the ones to instruct the children and insist upon their rinsing the mouth before they come to school. In that way we shall get a good start, but we shall make even greater progress in this movement by subjecting every child to dental inspection. Not alone dentistry, but medicine as well, has been at fault in not doing more along the line of prevention. Physicians have been willing to take care of children when they are sick, but not willing enough to teach the mothers and instruct the nurses what to do to render the children healthy and insure for them a good dentition. Four-fifths of the trouble for which the orthodontists are treating children today, I believe, could have been prevented if the nurses and mothers had done their duty, which they did not realize, because they had not been

told by the physicians. In many respects, as Dr. Strang says, the dentist is to blame, because we have not been willing to instruct the children early enough. It is certainly most gratifying to feel that a greater interest is being taken in this matter all over the country, and in the future dentists will not only have all they want to do, but there will be work enough for thousands more dentists in the country.

I could not help but recall some incidents in connection with lime-water when Dr. Fones was speaking. Fifty years ago my good old preceptor taught the use of lime-water and used it himself in his practice. He also advocated the use of salt water as a gargle, which is being used a great deal in medicine and surgery. These two agents have been laid aside, numerous antiseptics and proprietary preparations taking their place, although they do no more good than leave a pleasant taste in the mouth.

Dentistry is improving, and will improve from now on, as it has in the past, through the efforts of these men in the West who have taken the lead in many ways; I think dentistry is sure to be a more valuable and publicly recognized profession than it has been in the past.

Dr. HOFF (closing the discussion). I want to thank the gentlemen who have discussed my paper for the great courtesy and frankness of their expression. I am used to being overhauled without ceremony in my own country, and I hope that what you have said was not prompted merely by courtesy to a stranger.

I could not, of course, this afternoon make much comment on all the points that have been touched in the discussion. But first I want to say that I am not here to make an etymological study as to the propriety of the terms questioned by Dr. Taylor. I am perfectly willing that

Dr. Taylor shall use the term prophylaxis in preference, if he uses it as a noun. I use the term "prophylactic treatment" as covering the whole process of medication and treatment in a wider sense. I want to speak with Dr. Taylor at length with regard to one phase of this disease, about which I have my own ideas but am not quite sure as yet, namely, the recession of the gums of which he spoke. As Dr. Fones and others said, we find this at all ages; but I think the particular phase that Dr. Taylor had in mind was what I called gangrenous peridentitis, which is characterized by a gradual degeneration of the peridental membrane, causing a recession of the gums, and deep but restricted pockets. We often find this condition and cannot attribute it to any mechanical misuse of the brush or powder, or to chemical erosion. I called it, for the lack of a better term, gangrenous. I would like to suggest to Dr. Taylor that if he had used the aromatic sulfuric acid treatment but once or twice in the case cited, and had followed it with his prophylaxis instead of the remedy, he might have brought about the reconstruction of that gum to normal. I used escharotics freely at one time and advocated their use, but now I think they must be used with great caution. All these drugs have their place, but their place is the place of fire, and we cannot play long with them without being hurt. We must not play with escharotics; we must know what we are doing, and when our aim is obtained, leave them off. If escharotics are used intelligently, we derive benefits from them in the same way as we do from proper instrumentation. When a surgeon performs an operation, he does not keep cutting the wound every few days, but closes it up and leaves it alone. That is what we should do with escharotics.

Dr. Fones raised an important question, and one that I cannot attempt to fully discuss, namely, that regarding oral cleanliness. He took exception to my statement that malocclusion of teeth caused so much trouble. I think, however, his own argument bears out my statement. I believe, as Dr. McManus said, that a large percentage of periodontal diseases would not have occurred at all, or would have been easily prevented, if the patient's teeth had been in perfect occlusion. Then our patients could have clean mouths, as it would be possible for them to keep their teeth clean, which many times is not possible if the teeth are in an irregular position. If the teeth are irregular and uncleanable, the food which the patient eats becomes unclean; and the same may be said of the nasal passages and inspired air. The air inspired through the nose is not clean if the arches are contracted and the nasal passages are diseased. These facts have brought me to the conclusion that orthodontia treatment of these cases is of fundamental importance. If normal occlusion is present, the air-passages are unobstructed, and treatment can be confined to keeping the teeth and their environment in order. The jaws must be normally developed if the air-passages are to open so that air can pass through in proper quantity and without becoming contaminated. Just as the milk that passes through the unclean mouth of a baby becomes contaminated, so the air may be contaminated.

I want to say to Dr. McManus that I would like to go back twenty years and start with the ideas that I now have of dentistry. I would then select a number of children upon whom to do research work. I would have the parents place these children in my hands for dental care, and let me do with them what I be-

lieved best. I believe I could bring every one of those children to manhood or womanhood in perfect health, and with a physical development that no physical training we now know of could accomplish. I have treated a child who started life with anything but good prospects. She had enlarged tonsils, adenoids, considerable malocclusion, and nasal obstruction. The adenoids and tonsils were removed, the malocclusion was corrected, and the teeth were kept in perfect order. She has developed into a beautiful young lady with a beautiful set of teeth. She sleeps in a room with the windows wide open every night, even in cold weather, so that she has plenty of pure air to assimilate. She has had good food and home care, and today she is one of the finest specimens of young womanhood you would wish to see. It is just such cases as this that make me feel that, if I could go back and start over again, there is no nobler calling in all the world than this for me. I do not think anyone could have any higher ideal as a professional man than to do such work, and if we can do that in one case, why can it not be done in every case which comes into our hands?

In looking over the people as I travel in this section of the country I find that they are almost the same as those out West, with all kinds of malocclusion of the teeth, and I wonder how in the world some of the people whom I have seen in New England can eat anything at all with the teeth they have. This is your fault, gentlemen, who live in this section of the country; these people should not be allowed to go about with these teeth. It seems to me that we represent one of the greatest and noblest professions, although we are the youngest. If we can, by the care of the mouths of our patients, produce higher physical perfection of



men and women, is not that enough to satisfy anybody?

The reason why I have read this paper before you today is that, like Dr. Smith and Dr. Fones and many others, I believe the methods advocated are a fundamental necessity to all good dentistry. We have, however, not been able to get the general practitioner as much interested as he ought to be. It is a pleasure to me to know that efficient practitioners are becoming enthusiastic and are working along this line, but the general practitioner does not take up this work, because he has so much else to do. A good many practitioners tell me—"If you accomplish what you say you do, we shall have no more dental work to do after a while." If I had any such fear, I would want to get out of the profession. The more of this work I do, the more I find to do. There is not one person here but who needs this work. Every patient who comes to your chair needs it. I venture to say that there are not enough dentists in the state of Connecticut to properly do the work of this kind that is needed today in the city of Hartford.

As I go about over the country I ask my professional friends if they are doing all for their patients that they ought to do, and they want to know what I mean by that. I then ask them if they are doing all for their patients that their patients need, and I have yet to find the first man to tell me that he is. If there is anyone here who does this, let him

hold up his hand. I want to see the man.

Dr. FONES. I can put mine half-way up.

Dr. HOFF. You are not afraid that you are going to run out of work, are you?

Dr. FONES. No.

Dr. HOFF. You will not lose anything by this work, but you will no longer go home with backache, and with the disgusted feeling that there is nothing but carious teeth to deal with in our profession. If you take up this work, you will make more friends than you ever thought of. Every patient will be your friend, and you will find the children the nicest patients you ever worked for. Get them interested in this work, and you will become so enthusiastic that you will not want to make fillings, plate work, or anything of that kind. I am getting tired of this contour work; I do not want to see any more of it. I want correct abnormal conditions. We shall always have to put in fillings, but let us get this preventive work started, so that, by and by, the generations to come will have plenty to do that will be pleasant for them. The coming generations of dentists should do a kind of work that will be a pleasure and will honor our profession more than our highly skilful technical work now does.

Motion was then made and carried to adjourn until the evening session at 8 o'clock.

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### TUESDAY—Evening Session.

The meeting was called to order by the president at 8 o'clock Tuesday evening.

The first order of business for the evening was the reading of a paper

by Dr. W. G. EBERSOLE, Cleveland, Ohio, entitled "The Human Mouth and Its Relation to the Health, Strength, and Beauty of the Nation." (See next page.)



## THE HUMAN MOUTH AND ITS RELATION TO THE HEALTH, STRENGTH, AND BEAUTY OF THE NATION.

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By WM. G. EBERSOLE, M.D., D.D.S., Cleveland, Ohio.

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I PRESUME that if I were to ask this audience to name the most prevalent and destructive disease known to the human family today, ninety-nine per cent. would answer, "Tuberculosis."

I would, however, disabuse your minds of such an idea. Physicians will tell you that you are correct, and most dentists will tell you the same. They are mistaken, however, for such is not the case.

### TUBERCULOSIS OUTDONE AS THE PRIME SCOURGE OF MANKIND.

Dr. William Harper DeFord of Des Moines, Iowa, one of the leading dental teachers and writers of the country, in a series of articles upon "Tuberculosis of the Oro-pharynx," which is to appear in the *Dental Digest* in the near future, states in his opening sentence that tuberculosis is the most dreadful scourge of mankind; but Dr. DeFord is mistaken.

Proceeding, and in his first paragraph, Dr. DeFord also states—"Each year, in this country, enough people succumb to this malady to make eight armies the size of the standing army of the United States. That is not all; it is estimated

that eight or ten times this number are affected to some extent by this disease. One death in every seven reported is from tuberculosis. Each year the world yields up 1,095,000; each day, 3000; each minute, two of its people, as a sacrifice to this plague."

While Dr. DeFord is mistaken in his first declaration, he is absolutely correct in all that follows. Indeed, it is just such facts as these that have led the physician, the dentist, and humanity to believe that tuberculosis is in reality what Dr. DeFord claims that it is, the most dreadful scourge of mankind.

I wish to tell you tonight, however, that in spite of the great havoc which tuberculosis has wrought in this country, and notwithstanding the great inroads which it is making upon humanity at the present time, it is but the "handwriting on the wall," as it were. It is but a "visible declaration" of neglected and wasted opportunities.

### THE IMPORTANT RELATIONSHIP OF ORAL TO GENERAL HEALTH.

Tuberculosis is but one of the fearful results of neglected oral conditions, of

neglect of the human mouth, wherein grow and develop the media for the streptococcus and the other organisms which produce dental caries, or decay of the teeth. *Dental caries*, or decay of the teeth, is indeed the most prevalent disease known to modern civilization, and is producing greater havoc in the human family than all other diseases put together.

This is not an idle and ill-founded statement, but one based upon actual facts and figures which I am here to present this evening.

The mouth is also the greatest har-binger and the most extensive breeding-place for most other pathogenic micro-organisms. At least 95 per cent. of all tuberculous infections take place through diseased or ill-kept mouths. And what is true of tuberculosis, is true of almost all contagious or infectious diseases.

With healthy, well-cared-for mouths used for their intended purpose, mankind need fear but little from the ravages of disease; but with neglected, ill-kept, and improperly used mouths, mankind is to-day furnishing the best possible medium through which to develop all the ills and ails to which it is heir. This may seem a startling statement to some, but it is true, and we are prepared to prove it.

In the past, care and attention has been given the mouth by both the laity and the profession, with the principal thought of and view to beauty, while preservation of function and usefulness have been secondary considerations. But today the world is fast awakening to the important relationship which the mouth bears to the health and strength of mankind as well as to its beauty.

I repeat, that with healthy, well-cared-for mouths, used for their intended purpose, mankind need fear but little from

the ravages of disease, except those of old age.

Millions of dollars are being spent annually to prevent the contamination of food, water, and air by pathogenic micro-organisms. Herd after herd of cattle are being destroyed, and all foodstuffs are undergoing rigid inspection. Fabulous sums are being spent in securing water supplies free from micro-organisms, and every effort is being made to render the air we breathe free from detrimental and death-producing factors. Tremendous effort is being put forth to bring these three necessities—food, water, and air—to the human organism free from pathogenic micro-organisms which produce detrimental effects in man.

But, let me ask, What have we gained, what have we accomplished, even though we have destroyed every pathogenic cell in these three sustainers of life, if before they are able to fulfil their mission they are permitted, in passing into and through the human mouth, to become contaminated with just the kind of pathogenic micro-organisms which we have spent millions to destroy?

Recent examinations made in Cleveland, Boston, and Toronto show that from 96 to 98 per cent. of the mouths of our public school children are in a faulty or diseased condition. This means that practically 97 per cent. of our boys and girls are seriously handicapped by mouths filled with pathogenic micro-organisms, which, upon the slightest provocation, render their bodies susceptible to the inroads of various diseases.

If 96 or 98 per cent. of the mouths of our public school children are diseased, what must be the condition of mankind as a whole? Let me say that the faulty condition found in the adult population

of this country is more extensive and still more deplorable than are the conditions found among our children.

#### THE MOUTH AND PATHOGENIC MICRO-ORGANISMS.

I have stated that the human mouth is the best possible breeding-place for pathogenic micro-organisms, and that through it pass the micro-organisms which produce 95 per cent. of the ills and ails which inflict the human family. I hear someone say "Oh, my! Do you think he intends to use that old cry of microbes and bacteria?"

Yes, I must confess that I do expect to cry "bacteria," but I shall attack this subject from an entirely different direction than did most of the men who have discussed the subject since micro-organic life has been discovered. My cry is for the destruction of the principal breeding-places of these organisms.

But, says someone, "Is not man the principal breeding-place for pathogenic bacteria, and would you not have to destroy man in order to destroy these breeding-places?"

To the first part of that question we will answer, Yes. Man is the principal breeding-place for pathogenic bacteria; but to the last half we must answer, No, for it is not necessary to destroy man in order to destroy the breeding-ground. In perfect man, living and caring for his body as nature intended him to do, there is no breeding-place for pathogenic or disease-producing germs. It is only when he falls from his high pinnacle of perfection, when he neglects to properly use and care for his physical being, that his body becomes susceptible to the activity of disease-producing germs.

But we are told that we cannot ex-

pect to produce perfect man. No, we do not expect it; but we can so nearly approach perfection in mankind that diseases from micro-organic life will have little or no influence.

#### THE SALUTORY EFFECTS OF ORAL CLEANLINESS AS ILLUSTRATED BY MR. HORACE FLETCHER.

One of the first and most important requisites in attempting to produce perfect man is a clean, pure, wholesome mouth, a mouth cared for and used as nature intended it should be.

We have had the opportunity of becoming thoroughly acquainted with the man who has done more to show to the world what can be done in the way of approaching perfection in mankind from a physical standpoint than any other man living. We refer to Mr. Horace Fletcher, a man, who at forty years of age, was practically a physical wreck, with no seeming chance for ever gaining perfect health, and who has so far developed his physique at the age of sixty that he is not only able to stand the severe tests of strength but to practically double the records of the best athletes in the leading colleges of the country.

What has been the principal secret of this development? The proper *use* and *care* of the oral cavity—the first three inches of the alimentary canal, as he puts it—the mouth, the most important organ of our physical being; the mouth, the least considered, the most neglected and ill-kept organ of the body, the organ which can bring about such a change as that attained by Mr. Fletcher.

#### PREVENTABLE DISEASES.

The discovery of micro-organic life and the turning of the attention of pro-

fessional men in this direction has been of great value. As proof of this, we will say that the death-rate by typhoid fever, a communicable disease, the conquering of which is largely a question of sanitation, has been reduced 50 per cent. in the United States since 1880, and still 22,000 people die annually from this disease. The diphtheria rate has been reduced 80 per cent., but still there are 20,000 lives lost annually from this malady. Most of this reduction has resulted from the knowledge obtained in the study of bacteriology and sanitation, with little or no thought directed toward the oral cavity, the greatest harbinger of pathogenic micro-organic life and the portal through which most of these germs enter the human system.

But, notwithstanding these statistics, we are told that every hour seventy-two Americans die from preventable diseases. Each day lives are needlessly destroyed which equal a population of a town of almost 2000. Every year the sacrifice of life, through ignorance and neglect, equals the population of a city larger than Cleveland or St. Louis.

Our authority for this statement is Prof. Irving Fisher of Yale University, who has made a recent report to the National Conservation Commission, of which he is a member.

Just think of a city, larger than St. Louis, which is the fourth city in size in the United States, being wiped out in a single year by diseases which may and can be prevented! It is to aid in helping to prevent such a condition as this that we wish to discuss the care and use of that organ which will exert the greatest influence in correcting these faulty conditions.

Just think of our boys and girls, our babies, our loved ones, no matter how

much care and attention we have given them at home, being placed in an institution where it has been shown beyond any question that practically 97 per cent. of the inmates are abnormal or diseased!

What a "hue and cry" would be raised if parents were to deliberately send their children into houses containing patients ill with scarlet fever, or buildings filled with patients affected with measles. Or, imagine, if you will, parents sending their children to live for a certain number of hours each day in an institution containing patients ill with pneumonia, typhoid fever, or tuberculosis, with mouths that are breeding and throwing off those germs by the million, polluting and filling the air with death-producing bacteria.

#### THE PREDOMINANCE OF DENTAL CARIES.

In the opening sentences of my address, it has been stated that tuberculosis is not the most prevalent and destructive disease known to the human family. Later we stated that dental caries, or decay of the teeth, is the most prevalent disease known to modern civilization, and that it is producing greater havoc than all the other diseases put together.

Right here I wish to add another truism, that is, that the micro-organisms which produce tooth decay are just as readily transferred from child to child and from adult to adult as are the organisms which produce scarlet fever, diphtheria, pneumonia, or other kindred diseases; and that mankind is far more susceptible to the inroads of this than of any other disease known to mankind.

These statements are facts which I have believed and expressed for many years, but have been unable to prove absolutely beyond question until the last



few months. That dental caries or decay of the teeth is the most prevalent disease known to mankind has been proved by our examinations of the various public schools throughout the land, by which it was found that 97 per cent. of the mouths of our children were affected with dental caries to such an extent that it could be easily detected by a casual glance of the experienced eye.

tion, the Educational and Oral Hygiene Committee of the Ohio State Dental Society, and the Education and Oral Hygiene Committee and members of the Cleveland Dental Society, we have been able to secure definite facts and figures to prove the truth of the somewhat startling statements which I have made to-night.

Your committee has especially re-

FIG. 1.



Marion school "experimental class," before psychological tests were made or treatment undertaken; including Dr. Wallin, psychological director, and Mrs. Van Gastle, dental governess.

But, while this has been known for some time, there have never been placed at our command until within the last few weeks data and information which would prove the actual damage which dental caries has been doing to mankind in this broad land of ours.

#### RECENT STATISTICS OF DENTAL CARIES.

Up to within a few weeks, all statements relative to the value of perfect oral conditions have been based upon pure supposition. But now, thanks to the activities of the Oral Hygiene Committee of the National Dental Association,

quested that I explain the manner and method whereby these facts and figures were obtained, and introduce to you for your inspection and study the now famous "Marion school dental squad" of boys and girls, who have by their aid and co-operation placed us in a position to send broadcast throughout the world a message to mankind which is truly astounding in its nature. For it is through this class that we have been able to secure the data which prove the value of healthy mouths and teeth.

On March 18, 1910, the Oral Hygiene Committee of the National Dental Association, assisted by the Ohio State Den-

tal Society and the Cleveland Dental Society, opened the National Oral Hygiene men of the country were in attendance, and President Taft and Gov-

FIG. 2.



Part of experimental class in action.

giene Educational Campaign in Cleveland. ernor Harmon both sent personal representatives. Prior to this meeting all

FIG. 3.



An appreciated feature of the work.

The opening of this campaign marked the beginning of a new era in the oral hygiene field. Many of the leading oral hygiene work had been done along philanthropic lines, but when appointed, the present chairman of the Oral Hy-

giene Committee maintained that oral hygiene was an economic question, and not a philanthropic question in any sense.

To prove the correctness of his theory, the National Oral Hygiene Educational Campaign was opened in March, and six clinics were installed—four in the public schools, one in St. Alexis Hospital, and one in the Carnegie Library—to be conducted for a period of one year for the purpose of showing the actual value of healthy oral conditions.

Finding that the task of gathering data from such a large territory was impracticable, the chairman of the committee decided to ask for a special class upon which to make a complete test of the value of correcting faulty oral conditions.

#### THE MARION SCHOOL DENTAL SQUAD.

I will therefore have the pleasure of introducing to you the Marion school dental class or squad. (See Figs. 1-3.)

Fig. 4.



Jacob Bernstein.

JACOB BERNSTEIN. Age, fourteen; seventh grade. Family of seven, five children; father a junk dealer.

This child was found in a very unhealthy home, with practically no ventilation. He was sluggish and suffering with an extreme case of constipation. His mouth was in bad condition, demanding prophylaxis before anything else could be done. He now has a beautiful set of teeth, with healthy and firm gums. His indigestion and constipation are entirely cured. He is bubbling over with life and in-

terest, faithfully carrying out all instructions for the care of his teeth, because of the good health he is enjoying as a result. The principal of the school says that this boy is now his teacher's right bower, while in previous years he has at times been very unruly.

He had six of his permanent molars decayed, requiring one cement and thirteen amalgam fillings.

#### School record.

At time of entering class: *Scholarship*, poor. *Effort*, fair. *Attendance*, fairly regular. *Conduct*, fair.

At present time: *Scholarship*, good. *Effort*, good. *Attendance*, regular. *Conduct*, good.

#### Psychological record.

	Beginning.	Present.	Difference.	Gain or Loss.
Memory .....	51.6	48.2	3.4	6.6%
Spontaneous association .....	57.7	62.7	5.0	8.6%
Addition .....	19.0	15.0	4.0	21.0%
Association by opposites .....	54.0	56.0	2.0	3.7%
Quickness and accuracy of perception	40.5	41.7	1.2	2.9%
—or a total loss of 2/10 of 1 per cent. after deducting the increases.				

LILLIAN COHEN. Age fourteen; sixth grade. Family of seven, five children; father a peddler.

Her mouth was in an unhealthy condition. She was not properly nourished, as the result of improper food, which she was bolting. She was suffering with indigestion. Her eyes were inflamed, she was anemic, her vitality low. She now shows improvement in every way. Her indigestion is cured, and she is brighter and full of life, with a good clear complexion, and is following instructions of her own free will, because of the improvement she herself is now aware of. The principal of the school reports a great improvement in her school attitude.

She had eight carious teeth, requiring six amalgam and two cement fillings.

#### School record.

(One year behind grade.)

At time of entering class: *Scholarship*,

fair. *Effort*, fair. *Attendance*, very irregular. *Conduct*, poor.

FIG. 5.



Lillian Cohen.

At present time: *Scholarship*, good. *Effort*, good. *Attendance*, fairly regular. *Conduct*, good.

*Psychological record.*

	Beginning.	Present.	Difference.	Gain or Loss.
Memory .....	29.9	63.2	33.3	111.00%
Spontaneous association .....	31.3	57.7	26.4	84.85%
Addition .....	37.0	34.0	3.0	8.10%
Association by opposites .....	43.0	64.0	21.0	48.70%
Quickness and accuracy of perception .....	39.8	51.5	11.7	22.40%
—or a total gain of 52 per cent. after deducting the losses.				

HANNAH COHEN. Age thirteen; fourth grade. Family of six, five children; father

FIG. 6.



Hannah Cohen.

Her mouth was in a dreadful condition; the teeth were decayed and coated with green stain. She was suffering with constipation, was stolid, with no animation at all. She now has good teeth, the constipation is entirely cured, her complexion clear, and her color good. Improvement 100 per cent. both physically and mentally.

She had sixteen teeth beginning to decay, requiring ten amalgam and fifteen cement fillings.

*School record.*

(Three years behind grade.)

At time of entering class: *Scholarship*, poor. *Effort*, good. *Attendance*, irregular. *Conduct*, fair.

At present time: *Scholarship*, fair. *Effort*, good. *Attendance*, regular. *Conduct*, good.

*Psychological record.*

	Beginning.	Present.	Difference.	Gain or Loss.
Memory .....	34.90	38.30	3.40	9.74%
Spontaneous association ...	8.30	21.50	13.20	159.00%
Addition ....	12.00	19.00	7.00	57.66%
Association by opposites ..	3.00	21.50	18.50	616.66%
Quickness and accuracy of perception .	3.00	3.00		
—or a total gain of 168.6 per cent. after deducting the losses.				

HARRY FREEMAN. Age twelve; sixth grade. Family of nine, seven children; father a tailor.

FIG. 7.



Harry Freeman.

dead; family supported by eldest daughter, who is a finisher of coats.

His mouth had had no attention at all, and was in a bad condition. The teeth were



covered with green stain. He was suffering with constipation, and was very sluggish, unreliable, and secretive. He only obeyed because he thought he was forced to, and would fail as often as he could. His teeth are now in good condition. He is animated, pleasant, and reliable. His complexion is clearer, his constipation relieved.

He had seven teeth showing decay, and one cement and eight amalgam fillings were needed.

#### *School record.*

At time of entering class: *Scholarship*, fair. *Effort*, fair. *Attendance*, fairly regular. *Conduct*, fair.

At present time: *Scholarship*, good. *Effort*, fair. *Attendance*, regular. *Conduct*, good.

#### *Psychological record.*

	Beginning.	Present.	Difference.	Gain or Loss.
Memory .....	36.50	54.90	18.40	50.00%
Spontaneous association ...	70.90	92.40	21.50	30.30%
Addition .....	35.00	44.00	9.00	25.70%
Association by opposites . .	50.00	81.00	31.00	62.00%
Quickness and accuracy of perception ..	24.00	44.00	20.00	83.30%
—or a total gain of 50.2 per cent. after deducting the losses.				

IDA GOLDMAN. Age, ten; fourth grade. Family of ten, eight children; father a tailor.

The home is small and dirty; the family is large, the mother not strong, and seems unable to take proper care of her children. They are surrounded by an atmosphere of fear and superstition.

Ida was a delicate, nervous child, with her mouth in such a bad condition that it demanded attention at once. She was under treatment the entire time. Her mouth is now in fine condition. She is stronger and less nervous, and growing rapidly. Her color is better. It was the most difficult case the dentists had to treat, because of her fear and nervousness.

She had an exposed pulp in a lower molar, which was devitalized, and the root of which was filled. Six other teeth were filled, with four amalgam and three cement fillings. The

sensitive molars were treated with nitrate of silver.

#### *School record.*

(One year behind grade.)

At time of entering class: *Scholarship*, fair. *Effort*, fair. *Attendance*, regular. *Conduct*, fair.

At present time: *Scholarship*, fair. *Effort*, good. *Attendance*, poor. *Conduct*, good.

FIG. 8.



Ida Goldman.

#### *Psychological record.*

	Beginning.	Present.	Difference.	Gain or Loss.
Memory .....	40.00	33.30	6.70	16.70%
Spontaneous association ...	42.30	47.80	5.50	12.90%
Addition .....	23.00	21.00	2.00	8.80%
Association by opposites ..	10.00	45.00	35.00	350.00%
Quickness and accuracy of perception	28.00	44.00	16.00	57.10%
—or a total gain of 78.9 per cent. after deducting the losses.				

MORRIS KRAUSE. Age, ten; fourth grade. Family of seven, five children; father a presser of caps.

His mouth was not quite as neglected as some of the other members of the class. The purpose of bringing him into the class was to determine the effect of treatment upon degeneracy. He was the worst pupil in the school, playing truant, rebellious and deceitful. He was poorly nourished and anemic. Too much cannot be said for this child. His mouth is now in splendid condition. He is much stronger physically. The principal of

the school is delighted with his improvement. He now is regular in school, quiet, gentlemanly and obedient, and doing good work.

FIG. 9.



Morris Krause.

He had an exposed pulp in an upper molar, which was devitalized, and the roots of which were filled. Besides, seven other teeth were filled, six amalgam and eight cement fillings being inserted.

*School record.*

(One year behind grade.)

At time of entering class: *Scholarship*, fair. *Effort*, fair. *Attendance*, very irregular. *Conduct*, bad.

At present time: *Scholarship*, good. *Effort*, fair. *Attendance*, regular. *Conduct*, fair.

*Psychological record.*

	Beginning.	Present.	Difference.	Gain or Loss.
Memory . . . . .	20.00	33.30	13.30	66.50%
Spontaneous association . . .	29.20	44.50	15.30	52.00%
Addition . . . . .	30.00	35.00	5.00	16.50%
Association by opposites . .	5.00	46.00	41.00	820.00%
Quickness and accuracy of perception . . .	27.00	41.00	14.00	66.70%
—or a total gain of 204.3 per cent. after deducting the losses.				

BEATRICE KRAMER. Age, twelve; fifth grade. Family of thirteen, eleven children; father an iron-dealer.

Her teeth were very badly decayed. She had been under treatment the entire eight months, the work being only just completed. She was troubled with indigestion and constipation. Her complexion was sallow and muddy. She

is entirely cured of both constipation and indigestion now, and there is a marvelous improvement in her complexion and vitality.

She had exposed pulps in a molar and bicuspid; both were devitalized, and the roots were filled. Besides this, seventeen teeth were filled, requiring fourteen amalgam, fourteen cement, and three gutta-percha fillings. This child had hypertrophied gums that were also treated and cured.

*School record.*

(Two years behind grade.)

At time of entering class: *Scholarship*, fair. *Effort*, fair. *Attendance*, fairly regular. *Conduct*, fair.

At present time: *Scholarship*, good. *Effort*, good. *Attendance*, regular. *Conduct*, good.

FIG. 10.



Beatrice Kramer.

*Psychological record.*

	Beginning.	Present.	Difference.	Gain or Loss.
Memory . . . . .	36.60	30.00	6.60	18.00%
Spontaneous association . . .	39.60	41.20	1.60	4.03%
Addition . . . . .	35.00	27.00	8.00	22.80%
Association by opposites . . .	37.00	46.00	9.00	24.30%
Quickness and accuracy of perception . . .	51.20	52.70	1.50	2.09%
—or a total loss of 1.87 per cent. after deducting the gains.				

ROSE LIEBERMAN. Age, twelve; fifth grade. Family of eight, five children; father is agent for the Goodman Piano Co.

Her mouth was not repulsive looking, but required attention. She had some constipa-

tion, which has disappeared. A decided improvement is manifested. She has an increased vitality, and a clear, bright complexion.

FIG. 11.



Rose Lieberman.

She had two lower first molars with exposed pulps, which were devitalized and the roots of which were filled. Three other teeth were saved with one cement and five amalgam fillings.

*School record.*

(One year behind grade.)

At time of entering class: *Scholarship*, fair. *Effort*, good. *Attendance*, fairly regular. *Conduct*, excellent.

At present time: *Scholarship*, good. *Effort*, good. *Attendance*, regular. *Conduct*, good.

*Psychological record.*

	Beginning.	Present.	Difference.	Gain or Loss.
Memory . . . . .	43.30	48.30	5.00	11.50%
Spontaneous as- sociation . . .	51.15	61.05	9.90	19.00%
Addition . . . . .	25.00	25.00		
Association by opposites . . .	26.00	50.00	24.00	92.30%
Quickness and accuracy of perception . .	24.75	49.00	24.25	98.00%
—or a total gain of 44.16 per cent. after de- ducting the losses.				

ANNA PANKUCH. Age, eleven; fifth grade. Family of twelve, ten children; father has a small printing-office.

This child had never used a tooth-brush. Her teeth were coated with green stain, and needed treatment. It was difficult for her to learn how to use the brush. She was small

and delicate, poorly nourished, and suffering from kidney trouble. Since her work was completed, she has grown up vigorously, is stronger, with splendid color. In visiting her from time to time, the dental nurse has been impressed with her rapid growth and steady improvement mentally. Since mastering the use of the brush, she is one of the faithful ones of the class.

She had seven teeth filled, requiring eight amalgam fillings. The molars needed anal-  
gesic treatments.

*School record.*

(One year behind grade.)

At time of entering class: *Scholarship*, fair. *Effort*, good. *Attendance*, fairly regular. *Conduct*, good.

At present time: *Scholarship*, fair. *Effort*, good. *Attendance*, regular. *Conduct*, good.

FIG. 12.



Anna Pankuch.

*Psychological record.*

	Beginning	Present.	Difference.	Gain or Loss.
Memory . . . . .	36.60	49.85	13.25	36.2%
Spontaneous as- sociation . . .	49.50	59.40	9.90	20.0%
Addition . . . . .	30.00	24.00	6.00	20.0%
Association by opposites . . .	49.00	66.00	17.00	34.7%
Quickness and accuracy of perception . .	42.50	41.75	0.75	1.7%
—or a total gain of 11.84 per cent. after de- ducting the losses.				

LILLIAN SEMLAKOWSKY. Age, thirteen; fourth grade. Family of eight, six children; father a tailor, employed nine months of the year.

This girl's mouth was in bad condition, requiring a good deal of time for treatment, prophylaxis being necessary at the very first, before we could make an impression. She not only neglected her teeth, but was ignorant of their use, and bolted her food, especially meat. She was suffering from indigestion, constipation, and headaches. A marked change has taken place. She now has beautiful teeth. Her indigestion and constipation are cured. The complexion has cleared so wonderfully that it is about perfect, and she has developed into an attractive girl.

She had a molar with exposed pulp which was devitalized, and the roots of which were filled. The sensitive cavities were treated with silver nitrate, and six other teeth required one cement and seven amalgam fillings.

#### *School record.*

(Three years behind grade.)

At time of entering class: *Scholarship*, poor. *Effort*, poor. *Attendance*, irregular. *Conduct*, poor.

At present time: *Scholarship*, fair. *Effort*, fair. *Attendance*, regular. *Conduct*, good.

FIG. 13.



Lillian Semlakowsky.

#### *Psychological record.*

	Beginning	Present.	Difference.	Gain or Loss.
Memory . . . . .	38.25	43.25	5.00	13.0%
Spontaneous association . . . .	42.90	46.20	3.30	7.6%
Addition . . . . .	16.00	14.00	2.00	12.5%
Association by opposites . . .	0.00	21.00	21.00	2100.0%
Quickness and accuracy of perception . .	36.75	46.50	9.75	26.5%

—or a total gain of 426.9 per cent. after deducting the losses.

BERTHA SEMLAKOWSKY. Age, fifteen; sixth grade. Family of eight, six children; father a tailor, employed nine months of the year.

FIG. 14.



Bertha Semlakowsky.

This child's mouth was in bad condition, having been entirely neglected. The teeth were badly decayed, some extraction being necessary. She was suffering from liver trouble, having frequent dizzy spells, and accompanying constipation. Her complexion was of the worst kind, pasty, and the entire face covered with repulsive pimples. She was unreliable and careless. There was nothing in the home to help her, her mother being sickly, nervous and superstitious, throwing about the children the worst kind of atmosphere. The girl is improved in every way. Her mouth is now in good condition and she is faithful in its care. The dizzy spells have disappeared, and the face is clearer, with less of the eruption, which is confined to the forehead. Her conduct and appearance are improved.

She had two exposed pulps needing devitalization. The roots were filled, and nine other teeth required in all eight amalgam, six cement, and three gutta-percha fillings.

#### *School record.*

(Three years behind grade.)

At time of entering class: *Scholarship*, poor. *Effort*, fair. *Attendance*, irregular. *Conduct*, poor.

At present time: *Scholarship*, fair. *Effort*, good. *Attendance*, regular. *Conduct*, fair.



*Psychological record.*

	Beginning.	Present.	Difference.	Gain or Loss.
Memory . . . . .	50.00	34.95	15.05	30.10%
Spontaneous as- sociation . . . . .	77.55	94.05	16.50	21.27%
Addition . . . . .	25.00	19.00	6.00	24.00%
Association by opposites . . . . .	12.00	53.00	41.00	341.00%
Quickness and accuracy of perception . . . . .	51.50	55.25	3.75	7.20%
—or a total gain of 63.07 per cent. after de- ducting the losses.				

The above is a report of eleven of the twenty-seven children finishing in our class.

There is no need of going farther into the records of these children, except to say that the average increase in working efficiency for the entire number, as shown to date, is 54 per cent. The final tests for this class will not be made until between the first and fifteenth of May, when we expect to show an increase in the working efficiency decidedly in advance of that shown at this time.

The high percentage of increase as quoted above is unduly large, owing to the phenomenal showing made by two of the children, viz, Lillian Semlakowsky, 426.9 per cent., and Morris Krause, 204.3 per cent. It is the expectation of the committee, however, that when the work is completed, after eliminating these two children, the working efficiency for the remainder of the class will show an average increase of over 50 per cent.

#### THE PRACTICAL ECONOMY OF ORAL HYGIENE.

What does the evidence we have just submitted mean?

I do not know how many school children you have in Hartford; we have in

Cleveland about 80,000. It costs approximately \$26.25 per pupil per year to educate these children, in 97 per cent. of whom there is an unhealthy mouth, together with need of instruction in its care and use. If proper instruction were given and the trouble corrected, it would mean a great gain in the working efficiency of our school children, and save for the city of Cleveland a little less than half a million dollars annually.

The men who have studied this question thoroughly, and watched the work of the Marion school class, feel that proper instruction and correction would produce an average increase in working efficiency of at least 20 per cent. for all school children. If this is the case, then we are paying 20 per cent. or \$420,000 more to educate our children in Cleveland than would be necessary if these children were cared for, and used their mouths and teeth as they should. \$420,000—almost half a million dollars—might be saved in this way.

Great as is the handicap placed upon the school children of this country as a result of faulty or diseased mouths, the handicap will be found greater still in adult life, where the ravages of dental caries work even greater havoc than is found in our school children.

If correcting the faulty oral conditions among the school children will increase their working efficiency so much, and if with this we couple the teachings of Mr. Horace Fletcher and his followers in the proper care and use of the mouth, a 20 per cent. increase in working efficiency would be a conservative estimate indeed. If 20 per cent. increase in working efficiency be a reasonable estimate, let us see what that means to this country, when we calculate the producing value of the individual citizen of this country



Those studying the case found that this method of education, instead of meeting the requirements, was simply permitting a deplorable condition to go from bad to worse. The committee therefore decided that the only possible way of handling this great problem with any degree of success was to turn from the individual work at the dental chair and make use of the three greatest educational institutions of the nation—the public school, the public press, and the public platform. It is of the first of these three educational institutions that we wish to speak at the present time.

The educational campaign, as planned for the public schools of this country by the Oral Hygiene Committee of the National Dental Association, is based upon the three legs of a tripod, which consists, first, of the *inspection* of the teeth and mouth of every public school child in this country; second, in the delivering of *lectures* to the parents, teachers, and pupils on the care and use of the mouth; and lastly, in the conducting of *clinics* wherein the worthy but unfortunate may receive dental services for the correction of lesions found in their mouths.

That these three methods of instruction should be employed in connection with our schools we believe is readily conceded by all thoroughly up-to-date medical, dental, and educational authorities. The only question of dispute seems to be the relative value of these three methods. Medical, educational, and also many dental people believe that the clinic is the all-important part of this educational work.

We beg to call attention to the fact that the clinic occupies the position of being the least important, and we make this statement for two reasons: (1) The

free dental clinic has to do principally with the indigent poor, and therefore deals with the few, and (2) it is employed to correct the faulty condition, and therefore is a means of repair, and not prevention.

The most important part of the public school educational campaign is that of *inspection*, and the sending of a chart to the parents showing the actual conditions of the mouths of the public school children of this country. Second to this ranks the delivering of suitable lectures to the parents, teachers, and pupils.

Oral or mouth inspection in our public schools today is of far greater importance than the inspection of any other part or of all parts of the body.

#### THE DENTIST VS. THE PHYSICIAN IN ORAL HYGIENE.

In order to be of any value to the child or its parents, oral or mouth inspection must be made *by a dentist*.

There are two reasons for this:

*First.* In order to fix the attention of the child or parent upon the importance of the mouth and teeth and bring about the proper psychological effect, the mouth must be examined by an oral specialist, and this examination must be made distinctly and separately from general medical inspection; and none but a dentist is qualified for this work.

*Second.* The medical profession of this country is wholly unqualified to inspect the mouth, and always will be so, until the medical faculties of this country can be induced to include in their curricula a course of instruction which will at least acquaint the medical student with the important relationship that the mouth and teeth bear to the general welfare of the individual.

I am a graduate of medicine, and know how little is taught relative to the care and use of the teeth, and I have spent much time in endeavoring to convince the medical instructors of this country of the necessity of teaching the important relationship which the proper use and care of the teeth bears to the health, strength, and welfare of mankind.

Today I know of no medical college that is teaching anything beyond the number, names, and locations of the various teeth and the time when they should erupt, together in a few instances with a brief statement of some of the pathological conditions which may exist and how they may be recognized. The physician of today—and we are speaking of the profession as a whole—knows little or nothing of the teeth and their value to mankind.

There are exceptions to this rule, but they are few and far between, and these few are closely in touch with the dental profession, and are found present upon such occasions as this.

For the benefit of the laymen, we will say that the physician, ninety-nine times out of a hundred, when he asks to see any part of the mouth, asks to see the tongue or the oro-pharynx or the throat, and there his thought and interest in the mouth ends. How many family physicians ask about the teeth, let alone look at or inspect them?

I wish to say again, for the benefit of the laymen, that if you have a family physician who asks about the teeth or inspects them, cling to him, for he is an up-to-date medical practitioner.

The day must and will come when all examinations in the public schools must and will be made by one inspector, representing the board of health; but that day will only come when medicine recognizes

dentistry, and dentistry ranks with medicine, and the two become one.

It was Mr. Horace Fletcher who said that the physician of the future would practice the dental and the mental, and Fletcher, well versed as he is, spoke far better and truer than he knew.

#### TWO PRACTICAL CASES ILLUSTRATING THE EFFECT OF ORAL HYGIENE ON GENERAL HEALTH.

We have shown you much that we have done for the public school child, and we wish to draw your attention for a moment to the adult population. I can do this best by relating to you two of my experiences dating back eleven and twelve years.

Twelve years ago a lady of some means, forty-two years of age, came to me for the purpose of having all her teeth removed. Her mouth was in a frightful condition, it is true. We questioned her judgment and the wisdom of removing her teeth, and were told that she was in the hands of a number of specialists and that she had been told that the length of her life would not exceed two years.

She was in the hands of a specialist who devoted his time to digestive disturbances, and she was consulting another for cardiac insufficiency, and still another who made a specialty of kidney and urinary troubles. The oculist had informed her that she was fast losing her eyesight, while the gynecologist had proclaimed the necessity of a surgical operation before relief could be obtained from very distressing conditions.

In all, at the time when she fell into our hands, she was receiving care and treatment from six different specialists.

We asked whether any of these specialists had examined or discussed the con-



dition of her mouth and teeth, and were told that they had not, except so far as to advise her to have those teeth removed which were causing pain and suffering.

The stomach specialist informed her that she would be far better off if she had all her teeth removed and resorted to artificial dentures. Feeling that if she had but a short time to live she wanted as much comfort as possible, she decided to accept the advice of that specialist, and have her teeth removed.

We refused to extract the teeth and stated that we believed her entire trouble was due to nothing else but the diseased condition of her mouth and the poison generated therein. To prove our statement we volunteered to treat and relieve the conditions which were causing suffering, and temporarily place her mouth in a healthy condition, and were to receive a fee or none, depending upon the results obtained.

Twelve years and more have come and gone, and today that patient is in perfect health, and a most beautiful woman for her age. She received no treatment except that her oral cavity was placed in such a condition as to insure its normal function.

The second case is that of a woman of thirty-six years, reputed to have serious heart, lung, kidney and stomach disturbances, whose attending physician had given her but six months to live. Her mouth was in a frightful condition, and she came to us to be relieved from the torture caused by a number of aching teeth.

This took place about eleven years ago, and this woman is well and living today, and owes her health, strength, and beauty to the care and attention she has given her mouth and teeth.

These are but two instances of the thousands of cases of stomach, liver, lung, and heart troubles due to faulty conditions of the teeth which the physician has failed to recognize; and all the medicine and medical treatment in Christendom cannot cure such troubles. Such patients must use and care for their mouths and teeth properly, if they expect to recover their good health.

Thus again, Fletcher spoke more wisely and truly than he knew.

#### THE RECOGNITION OF DENTISTRY.

Dentistry, which presides over the gateway to the human body, must and will rank with medicine. For years it has been begging for its due recognition—begging, not demanding, for it had no right to demand until it had at its command evidence which would prove in facts and figures, reading in dollars and cents, its value to mankind.

For years it has been knocking at the doors of the health departments of this country. For years it has been raising a feeble cry for recognition in the congressional halls, only to be met with a stony stare and a deaf ear.

But during the past year, as a result of the great educational campaign installed by the Oral Hygiene Committee of the National Dental Association and by its auxiliary committees, wonderful changes have been wrought. The cry of "philanthropy" has ceased, and "education and economics" is being preached, with the result that Dr. Eugene H. Porter, commissioner of health of the great state of New York, has placed upon his staff two of the best known and most competent dentists of the country, Dr. W. A. White of Phelps, N. Y., and Dr. Herbert L. Wheeler of New York city,

as special lecturers and consultants to the health department of the state.

Dr. W. A. Evans, commissioner of health, Chicago, Ill., has appointed Dr. F. F. Molt as supervising dental surgeon on the board of health of that city, whose duty it is to co-operate with the dental and educational authorities of Chicago in the installation of a campaign of inspection and clinical care for the children in the Chicago public schools.

Last, and best of all, we have at last secured the recognition of the United States government; first, in the appointment of two dental inspectors for the District of Columbia, and second, in the passage of a bill for the installation of a dental corps in the United States army, giving its members the definite rank, pay, and pension of a lieutenant.

In addition to this the whole country is awakened to the importance of oral hygiene, and the National committee is being besieged on every side with applications for information and assistance in installing local educational campaigns along the line outlined by the National committee.

#### CONCLUSIONS.

Before closing our remarks, and lest a question be raised as to the value of dental inspection and instruction as related to our public schools, we wish to make this statement: Dental inspection and instruction is of infinitely greater importance than medical inspection, because of the fact that when the mouth is properly cared for and equipped for its purpose in life, all the other ills and ails of the body will be lessened materially.

That our statement in this connection is correct we are prepared and willing to prove, and for the benefit of any

doubting Thomas we will state that we are willing to select any school in any city in this country, divide it into three equal parts, turn one-third over to medical inspection or instruction as practiced in the past and present, one-third to dental care and instruction as practiced in the present, and leave the last one-third without care or attention from either medical or dental inspectors—the percentage of increase in health, strength, beauty, and working efficiency of those receiving medical and dental inspection to be based upon the improvement shown as compared with the one-third receiving no care or instruction. We are willing to stake the entire future of oral hygiene that the pupils receiving care and instruction from a dental standpoint will show an improvement in excess of that made by medical inspection by at least 50 per cent.

To those who may feel inclined to doubt the correctness of these statements, I have only to say, Try it!

The knowledge obtained from a long study of this question, coupled with the experience recently obtained in this work, leads me to feel that my position in this matter is not only secure, but that my claim as to the relative importance of the two inspections is modest when compared with the actual showing which will be made if such a test is employed.

We are fully aware that many of our statements sound like fairy tales. We know only too well that we have been classed as enthusiasts, and that our statements are being measured by the degree of enthusiasm which we have shown.

We not only know that some of these statements are not believed, but want to say that we did not think that some of them would be believed. Not that they are not true, for whenever we have made

a statement of fact we have done so only after proving it beyond question. The only reason why you do not or cannot believe is because you have not given this matter sufficient thought, nor made any effort to familiarize yourself with the subject to an extent which would enable you to see these conditions as they actually exist.

It is only the man or woman who has given considerable thought and attention to conditions of which we have spoken, who is qualified to judge these statements.

Let me plead with you to give the question of oral hygiene and its influence

careful thought and consideration for a few months in the near future, and then, and then only, you will be in a position to know and understand the value of what we have stated. Twenty years and over of thought and study in this domain have led me to recognize and know the subject of this evening.

We are told that the boards of health and education, together with the laymen, are well represented upon this occasion. Let me urge upon you all, whether you be of the medical, dental, or legal professions, or of the laymen, to join forces in the interest of the health, strength, and beauty of the nation.

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### DISCUSSION.

Dr. H. L. WHEELER, New York. It is with some diffidence that I follow such a magnificent speaker as my distinguished colleague, Dr. Ebersole. The work that is being done in Cleveland is of the greatest importance, and I think is scarcely appreciated at the present time.

While I observed from the slides shown that this work represents at present almost wholly one class of children, and realize that necessarily it will not settle any question until it has been carried on for many years and on a broader basis, it points very strongly to the way in which we should go.

While I agree with Dr. Ebersole in all essentials, I would speak of some points of disagreement. I observe that the essayist placed the dental clinic at the bottom of the list of important work to

be carried on in this dental hygiene propaganda. Possibly that is correct, but supposing we get dental inspectors?—and, by the way, in New York city a health commissioner is in favor of having dental inspectors appointed upon the same basis as medical inspectors. How many will be appointed at first I do not know, but probably it will be a small number, because New Yorkers are much like the people of Missouri—they want to know, and until they have evidence they are not likely to take up this work very thoroughly. Attending to 600,000 school children would necessitate the employment of all the dentists in the country and would bankrupt the city, and therefore they are going to commence with a few at first. But this dental inspection is bound to come. The school board is also anxious to help us, and our general

superintendent, Dr. Maxwell, only recently made the proposition to me that, if the dental societies of the city would get together and decide upon the fundamentals that should be taught in the public schools, he would see that pamphlets are published and placed in the hands of the teachers, who would teach the classes in these fundamentals. The board of health and the board of education are thus both working in sympathy with us.

But—to get back to the question of dental clinics—supposing we get these inspectors, who were placed first on the list by my predecessor, and we find that ninety-five per cent. of the children of the public schools of New York city are in need of dental service, and that in many cases their mouths are as bad as those pictured on the screen, and we tell them to have their teeth attended to; to whom will they go? Seventy-five per cent. of the 600,000 school children in New York city have never been in a dental office. The majority of them, probably, have not the means, and those who have the means are frightened and do not realize the intimate relation of the teeth to the general health and welfare of the body. Where, then, are we going to find dentists to attend to these children? how are we going to provide for the carrying out of the instructions which the inspectors send home to the parents? Where can this dental work be done, if it is not done in dental clinics? I know that the average dentist in New York city is too busy to attempt this work, without injuring his health; I know this from my own experience. It is unfortunately the situation as it confronts us.

It is sometimes said that clean teeth do not decay. That is a very good slogan, but it is not always true. If decomposing

food material surrounds the teeth, they will decay. Frequently the process of nourishing the body is at fault. Sometimes the food is not properly selected; sometimes the apparatus that transforms the ingested food to render it suitable for nourishment is at fault, with the result that but little of it can be utilized, and because of this faulty metabolism a fluid is secreted from the mucous glands in the mouth that of itself is capable of fermentation, and this fermentation goes on even if there are no food substances in the mouth. If a mouth is so clean that it is impossible to find fermentable or decomposing food around the teeth, it is still possible for the saliva itself to be fermentable, and for dental caries to go on.

Fortunately, however, cleanliness, as has been advocated here tonight, will decrease the possibilities of caries, and in fact will sometimes entirely eliminate it. If cleanliness of the mouth is taught in the schools it will go far toward making the services of the dentist less necessary. But it will be a long time before it is possible to attain that desirable condition. I am quite sure that, as fast as the dental profession deserves it, it will obtain the co-operation of the intelligent portion of the medical profession. My experience in the city of New York has been that the board of health, the board of education, the physicians that have charge of the city's hospitals, and the boards of trustees of the hospitals are quite willing to give the dentist as much opportunity to show what he can do as they are willing to give the medical man this opportunity, and the result has been that the dental staff has been placed upon the same basis as the medical staff. In the hospital with which I am connected, and which has over twelve hundred beds for emergency cases, we have a dental interne. He has not



begun work yet, but he has been appointed, and we have a staff of assisting dentists and visiting dentists, whose standing with the board of trustees is identical with that of the physicians, and, as far as I know, with the exception of the little jealousies that make life worth living, they get along very well together.

As I mentioned before, the board of health takes the same attitude, and the board of education a similar one. We have had some difficulties, however. You have probably read the figures compiled by the examination of some 200,000 school children. This examination was made by young physicians, inspectors of the board of health; and the board of education, which considers itself able to decide for itself what to accept, decided that there were some things they would not accept, and they wanted dentists to do this work. As a result they set aside twelve schools, in which there were about 31,000 pupils, and told the dentists that they could go there any time of the day when these schools were in session, and gave them permission to buy charts and make examinations, and this we are now doing.

Of course it is a fact that enough dental examinations have been made, but you will find that the taxpayers and the local boards, when the reports of such examinations are submitted, desire to have these examinations made in their own schools. The taxpayer in Hartford does not care very much what happens in the New York board of health or of education, but if he is shown that the people of Hartford present the same condition as those in Cleveland and New York, he will lend his help to work out this problem locally. If the Hartford dentists are ready to work together and submit

to the board of health a definite plan of proposed work based upon reasonable proofs, they will surely receive the co-operation of this department, and from a small beginning will be able to work out the problem for themselves, as will have to be done in all communities throughout the country.

Cleveland has a considerable advantage in that they have the services of the energetic chairman of the National Association's Committee on Dental Hygiene. He has untiringly brought to bear the influence of his position to get some practical work done in Cleveland, and the movement is working out beautifully there. If the National Association were to attempt to find chairmen of his quality in every city, and to accomplish the same progress, the amount of money needed and the energy expended would bankrupt the dental profession, if not the taxpayers. Nevertheless, this problem has come to stay and will have to be worked out patiently, laboriously, and according to local conditions in each place. The data cannot be supplied for the entire country by any one committee, but when an intelligent community in America realizes the fact that unclean mouths are important factors in the health of the individual something will be done—because there are not dentists enough in America to attend to the situation.

The health commissioner of the state of New York appointed dental members to the board on these grounds: It is customary for that department to have expert members in all departments—experts upon scarlet fever, typhoid fever, sanitation, etc., and Dr. Porter felt that the cycle would not be complete until he had appointed expert dentists to give advice in regard to the rôle of unclean

mouths in producing disease and trouble for the individuals of the state of New York.

Dr. N. S. Hoff, Ann Arbor, Mich. I do not know where Dr. Ebersole secured all of the horrible pictures that he has shown, nor where he secured the beautiful ones that he showed in contrast with them; I have, however, no doubt that they are true pictures, and that they represent actual conditions. The essayist's lesson is most graphic and convincing, and wonderful good has been accomplished by this work in these few children upon whom the essayist has made these experiments, and still more wonderful good might be accomplished if all the children of this country needing such treatment were subjected to a similar experiment. This work, however, has been done for a special purpose—it is in the nature of scientific research; and it is so convincing in its scientific aspect that I cannot get away from the practical bearing of the subject. What a wonderful accomplishment it is to have converted a boy who has probably upset the discipline of the whole schoolroom into a good and obedient scholar! It is a miracle, and looks too good to be true, yet I have no doubt of the facts. Such work worthily ranks with the many modern efforts of a benevolent character. We are trying to reform criminals, to educate people to the appreciation of better hygienic conditions, to better living and doing, but we have been neglecting one of the greatest opportunities offered for doing still greater good. It is indeed ideal work to teach these unfortunate children by such simple treatment how to take care of themselves in such a way as to bring about a remarkable transformation in their lives, render them more capable of assimilating the instruc-

tion they receive in school, and give them a new outlook on life. To think of all the 600,000 children in the schools of New York city, many of whom need such attention, and every one of whom can, in fact, be helped in some measure, and many of whom could be transformed, from possibly a tendency to become criminals, into strong, healthy, vigorous, productive citizens! I do not know of any better use to which the city of New York could put its money than to undertake a work of this kind, and if I were in Dr. Wheeler's place and had his opportunity and influence, I should not rest until I had accomplished something there. In view of this important movement now on foot the dental profession has a grander opportunity than has any other profession. Our ministerial friends could not ask for a better missionary work than we have in our very grasp, and if we can carry it to a successful issue our profession will stand at the head of all benevolent callings.

I spoke this afternoon of the possibilities for doing such work with the children in our own private practices. The children in our private practices may not be of the class that has been represented to us tonight, but they are the children who are to become the men of public influence in the several communities; they are those who are to take the places of the present men of affairs. If these children, although they are not degenerates, could be brought under the influence spoken of by the essayist, many of them would have a vastly better opportunity than they are likely to have with the handicaps from which they suffer. We as a profession have these children under our protection and care, yet to a large extent we are letting pass this golden opportunity, for as practitioners

we are not doing what we should to develop to full strength their physical and mental capacities.

I had my breakfast this morning in a hotel in the southern part of this state; around a table near me six gentlemen were sitting, and from their conversation I judged that they were all connected with some of the important industries of this section, because they were deploring the business situation and considering plans by which they could increase the dividends on their investments. I noticed, however, that while they ate, they simply threw their food into their mouths, nervously talking all the time. It seemed to me that they were eating simply because they had to, and hardly knew what they were eating, doing it in such a way that they could not possibly receive any benefit from it. Such are the men who have charge of the business affairs of your state. I do not believe that they have been properly educated by their dentists. Some of you doubtless have charge of these men, and you certainly have not done your duty by them. The question before us tonight is, Are we doing our duty? The task before us seems to be a tremendous one, and I do not see any way of accomplishing it. I have time and again asked Dr. Ebersole where we were to get the men to do this work, because the dental profession is called upon to take care of the results of all this agitation, and I have cautioned him about agitating this question so much. I do not want to say this to throw any damper on what he has said tonight, but I wish to impress upon the dentists of this state the fact that a revolution seems imminent, and we must get ready for it. I want to add my testimony to the value of this demonstration, and wish also to state that the facts which

the essayist has presented are not visionary, nor are they made up for any unworthy purpose. From my own work in this line in my private practice, I know that these facts are not exaggerated, and they reinforce my conviction of the tremendous importance of this subject. The situation is clear, and as a profession we must make some provision for properly coping with it. I do not know how it can be done, but I hope that some way can be devised, possibly through the co-operation of the medical profession and with the help and influence of the state boards of health, by which some scheme may be elaborated that will bring about a proper solution of the matter.

Dr. EBERSOLE (closing the discussion). In closing I should like to make two or three explanations. One of the most difficult propositions with which we have had to deal has been and is the *dentist*. We have on the platform one of the few men who have done the most in this country to advance the oral hygiene work to its present position—Dr. Wheeler; but I wish to say that even Dr. Wheeler does not grasp the question as he should—and if I can make him see this question in the light in which we are trying to teach it from the standpoint of the National Dental Association we will have accomplished wonders for the 600,000 school children of the city of New York.

Dr. Wheeler takes issue with me as to whether the dental clinic or dental inspection is the most important side of the question. Dr. Wheeler maintains that the clinic is the most important, and then immediately proves the correctness of my statement that dental inspection is the most important, by telling you that there are not enough dentists in the United States to take care of the conditions that exist in New York city alone.



If there are not enough dentists in the United States to take care of the people of New York city, how are we going to establish clinics to take care of them? Let us go back of that problem and teach prevention, inasmuch as we cannot take care of the conditions that exist. That is the plan upon which the National committee started their campaign—viz, to educate the public to guard against these conditions, to teach them to take care of their mouths and prevent the continuation of these conditions in the future. Therefore I maintain that dental inspection is the most important part of the educational work which is demanded to meet this deplorable situation. This movement must be conducted along the line of education, and not of correction. I would be very glad to take care of the conditions that already exist, but you know we have less than forty thousand dentists in active practice in the country today, and these are taking care of a little over 8 per cent. of the people who need attention. We know that to take care of the 91,000,000 of people in this country in the same way as 8 per cent. are now being cared for would require 330,000 dentists; and yet the dentists who are rendering dental service today for those 8 per cent. are doing less than half the work which their *clientèle* needs. That being the case, it would require over 660,000 dentists to properly take care of the people in this country—an utter impossibility. Therefore, if we are to solve this problem at all, we must approach it from the side of prevention.

If I have made that one point clear—if I have fixed in your minds that this is an educational campaign, that the philanthropic side of it is absolutely out of the question as utterly inadequate—

that we must teach prevention, I think I shall have accomplished something.

Dr. Hoff, I believe, asked the question, How are we going to procure men to do this work? I think I have answered that by saying that it is an utter impossibility. All we can do is to teach prevention as far as possible.

Dr. Wheeler spoke of the interesting campaign in Cleveland as a local affair. The work done in Cleveland has been done from the national standpoint, and by the National Dental Association's Committee. It was done in order that we might submit to you the evidence shown you tonight; it was done from a national standpoint in order to place at the command of the dental profession of this country absolute proof of the value of dental service. True, the work done in Cleveland is far short of what it should be, and it is the purpose of the men interested in this work to procure better and more extensive proof of the existing conditions.

Dr. Wheeler spoke about taking care of only one class—the poor. I want to say that the conditions found in the poor homes is but little worse than that found in the homes of the well-to-do—do not forget that; and to meet that question I threw upon the screen the picture of the son of a multi-millionaire, a patient of mine, and that speaks for itself. You will find such conditions all over the country, though they may not all be quite as bad as the case shown.

I am sorry to have detained you so long, but I hope that I have left a message with you that will do you good.

The meeting was then declared adjourned until Wednesday morning at 10 o'clock.



**WEDNESDAY—Morning Session.**

The meeting was called to order Wednesday morning at 10 o'clock by the president, Dr. Murlless.

Dr. W. G. EBERSOLE, Cleveland, was introduced by the President, and extended to the members of the association, on behalf of the dentists of Cleveland, an invitation to come to the meeting of the National Dental Association to be held in Cleveland in July.

Dr. JAMES MCMANUS also urged the

members of the Connecticut State Dental Association to send a good delegation to the National meeting, as this year one of their members, Dr. E. S. Gaylord, New Haven, is the president of the National body.

Dr. MURLLESS then announced as the next order of business the reading of a paper by Dr. C. S. BUTLER, Buffalo, N. Y., entitled "The Pathology of Artificial Dentures." (See next page.)

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# THE PATHOLOGY OF ARTIFICIAL DENTURES.

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By CHARLES S. BUTLER, D.D.S., Buffalo, N. Y.

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"THERE is in the world but one work worthy of a man—the production of a truth to which we devote ourselves and in which we believe."

THIS is the closing sentence of that incomparable "History of English Literature," by Taine, and I recall my delight, though it is now many years ago, when I came upon it at the end of a long and somewhat tedious reading of that remarkable book. Its revelation, as well as its completeness of thought, was ample compensation for the many hours of almost hopeless drudgery necessary to complete the task, and it has ever since remained as an inspiration and a help to me in an effort to solve some of the many problems confronting me, as I have striven for the progress and development of our professional status.

It is not easy for us to appreciate or to measure the rapidity and suddenness of the growth of dental science, and it is never without profit to recall in a serious way the conditions necessitating a separate and independent course of development; but we should never fail to record our gratitude for the fact that that seeming evil of separation from the mother science in 1839 has been overruled for the benefit of suffering humanity and to the credit of general medicine.

It is believed that the history of no other profession affords a parallel to the

remarkable advancement of dentistry, and this advancement has been due, in part, to the general forward movement along all lines of medical and scientific research, but in part, also, to the unusual devotion with which so many of our members have given themselves to the production of the truth in which they believed and for which they have striven. I am about to speak on a subject not of my own choosing, but in the hope that it may be one that shall bring us nearer to a solution of some of the problems giving rise to pathological conditions following the insertion of artificial dental substitutes.

## THE EVOLUTION OF PROPHYLAXIS.

A careful study of the origin and development of the science of medicine reveals at the remotest period of history a tradition that to prevent disease was a duty incumbent upon all men. Even as early as the Homeric age, when medicine seems to have already acquired a history and to have been organized into a distinct profession, the idea of prophylaxis or preventive medicine had apparently attained some prominence, as it is

frequently mentioned and in some cases clearly set forth in the poetic writings of Homer. It was not until some centuries later, however, that Hippocrates enunciated fully the principles of preventive medicine, and these principles, five hundred years later, were expanded and vitalized by Galen, and through all the intervening centuries they have energized and specialized the progress and development of medical science. But during all these centuries history fails to record a period in which these principles have been more marked or in which they have possessed a wider influence than at the present time, when sanitation forms an important department in municipal and state governments, and when so many diseases having their origin in unsanitary surroundings seem about to be eradicated. What is taking place in the wider field of sanitation is occurring, with even more marked significance, in the various specialties of medicine and surgery, and particularly in those having to do with the oral cavity and adjacent sinuses.

#### ORAL PROPHYLAXIS.

Mouth sanitation or oral prophylaxis, receiving such wide attention from both the medical and the dental profession, as well as from philanthropists and settlement workers, is a marked confirmation of the above statement, and should it come to pass through this agitation that there shall be brought about an improved condition of cleanliness in the mouths of the children and youths of our people, doubtless many of the diseases to which they are now subject will be greatly modified or altogether abolished. Indeed, so much has already been accomplished in this particular direction that we may well have great expectations for the future.

#### DENTAL RESEARCH INSTITUTES.

The recently established Forsyth Dental Infirmary in Boston is one of the most encouraging, as it will doubtless prove one of the most helpful, agencies in the general forward movement of preventive medicine, in that it will afford an opportunity, hitherto not ours, for carrying on research work in young children—a field as yet almost wholly unexplored from a dental standpoint. As you are doubtless aware, the infant body is not an adult organism in miniature. All its organs are incompletely developed but not uniformly so, while the whole system is characterized by peculiarities of structure and function. The preponderance of its nervous over its physical system is especially marked, and because of this the infant is predisposed to disease, and his clinical examination cannot be successfully practiced along such lines as are employed in adults. Therefore hospitals and infirmaries, directly under our care, will offer the opportunity for intelligent and conscientious research of immense value if rightly used, and must yield a rich return in the production of truths not alone for the advancement of our profession, but also and more broadly for the alleviation of human suffering. Dentition, although a purely physiological process, for instance, is nevertheless almost always accompanied by some degree of suffering, and it is still an open question how much influence it has on the causation of disease, and we should hail with satisfaction all institutions and movements having to do with the solution of any of these problems.

#### SCOPE OF SUBJECT.

In presenting a discussion of prosthetics I am embarrassed at the very outset

with a feeling that any such discussion is more or less distasteful to a very large number of our profession—a condition due either to an inexcusable lack of interest in it, or to a want of appreciation of its importance; and it is with a desire to create a wider interest in it that I reluctantly consented to present it for your consideration, and I do so in the firm belief that, next to prophylaxis, prosthesis is the most important, as it is the most neglected branch of our professional work.

The presence of artificial dentures upon the mucous surfaces of the mouth, pathologically considered, is always a cause for apprehension, and in view of the large number of persons who, by reason of a premature loss of the natural dental organs, are required to wear such dentures, it is of the greatest importance that their deleterious influence should be recognized and eliminated as far as possible.

#### DELETERIOUS EFFECTS OF ILL-FITTED PROSTHETIC PIECES.

My attention has been particularly called to this subject by the presentation of three cases of unusual interest and severity, two of them due to ill-fitting rubber dentures and the other to an ill-constructed five-tooth bridge.

#### PRACTICAL CASES.

The first of these cases concerned a woman of some fifty years of age, who had been wearing a full rubber denture for eighteen years, and presented with a growth about as large as the ball of the thumb, extending from the left bicuspid fossa to the condyloid process, springing from the mucous tissue of the mouth closely above the rim of the plate,

and being at times exceedingly painful. On examination by the patient's family physician, an intelligent and capable man, the growth was pronounced carcinomatous in character and of a malignant type, and immediate operation for its removal was advised. The natural timidity of the patient caused her to hesitate, and some weeks afterward she came to me for treatment of an inflammation at the lower molar; and, on seating herself in the chair, she called my attention to the trouble in the upper mouth and told me of her great fear of the danger attending a surgical operation. On examination I found the conditions as above described, and urgently advised a new plate, with the assurance that probably that was all that would be needed to effect a cure. She readily accepted my advice, but great difficulty was experienced in securing an accurate model of the mouth on that side, which was only accomplished by lifting the growth away from the process and filling underneath with soft plaster of Paris, allowing it to set, and then taking an impression over the entire mass. The details of this procedure will be readily understood, and need not be dwelled upon further. Over the model thus obtained a rubber denture was constructed, and when it was placed in position the edge of the plate passed underneath the hypertrophied growth, thus bringing the pressure and weight of the cheek to bear directly upon it. It is gratifying to record that at the end of four months the entire mass had disappeared, and now, at the end of nine months, the mouth seems to be in a perfectly healthy state.

The second case is that of a woman of about the same age, with full upper and lower dentures, which she had been wearing probably fifteen or more years. My attention was first called to this case some



years ago, at a time when the patient was suffering from aphthæ involving nearly all parts of the oral cavity not covered by the plates, and also the lips and face about the angles of the mouth. The patient informed me that she had been afflicted in that way almost constantly, with varying degrees of severity, for several years. The mucous membrane beneath the plates in appearance resembled raw beef, and the entire mouth was in a highly inflamed condition. At the time when I first saw her she complained of being in poor health, not only suffering much with her mouth but apparently being in a highly nervous and irritable state. I advised that her general condition was due largely, if not entirely, to the irritation of the plates, and urged a change without delay, but I am sorry to say that up to two years ago nothing was done, and as a result she underwent a steady decline, until she became a complete nervous wreck, and was confined to her home and room much of the time. On inquiring recently I was informed that she had changed the plates, and was said to be improving in general health.

The third case, and one not so unusual as to have escaped the notice of many practitioners except for its particular severity, was that of a patient wearing an ill-applied, poorly constructed and improperly articulated left upper bridge, extending from the first bicuspid to the third molar. At the time this patient presented the bridge was almost completely overgrown with hypertrophied tissue. This, as in the other cases cited, had caused serious impairment of health, resulting from long and continued irritation. The removal of the bridge and abutments was advised and accomplished, and in a few months a complete cure was effected.

#### PATHOLOGICAL CHANGES OF THE SOFT ORAL TISSUES UNDER MECHANICAL IRRITATION.

These cases have been cited somewhat in detail in order to demonstrate more clearly the conditions of which I am about to speak. It should always be remembered that artificial dentures of whatever character, whether fixed or removable, are, pathologically considered, causes for apprehension; that they are foreign substances in the oral cavity, and that they may, and generally do, to a greater or a lesser degree, become irritants to the tissues and organs with which they come in contact. That we may understand fully what takes place under such conditions, let us look somewhat minutely into the anatomical structure of the soft tissues of the oral cavity, and consider the changes which take place under mechanical irritation leading up to a pathological state.

The mucous membranes of the oral cavity and the skin present the same anatomical features, with few exceptions. They are analogous products of the external layer of the blastoderm and are continuous the one with the other, at the lips. The mucous membrane consists of the stroma, epithelial cells covering it, the lymphatic glands, and nutrient vessels which lie embedded in the substance of the stroma. The surface of the stroma is covered with papillæ, which, with the exception of those found under the tongue, are identical with those of the skin. The spaces between the papillæ are filled with epithelial cells, which give the membrane an outwardly smooth appearance. The deepest portion of this epithelial layer is formed by a layer of protoplasm, and in this protoplasm layer are found the youngest epithelial cells.

*Excessive desquamation of epithelial cells.* In a normal mouth there is a constant production of young cells and a subsequent desquamation of the oldest cells of the epithelial layer. These cells, under ordinary conditions, are floated away in the saliva. The exfoliation of the epithelial cells is a physiological process, though in health it takes place slowly. A too rapid shedding of these cells gives rise to pathological changes. Shallow ulcers, aphthæ, or canker are caused if the superficial cells are shed faster than the young cells are developed. One of the most favorable conditions for a too rapid shedding of these cells is established under artificial dentures resting upon the mucous surfaces of the mouth; for artificial dentures, of whatever kind, are poor conductors, not only because of the material employed, but also because of decomposed saliva and mucous débris adhering to them, and on that account the mucous membrane of the mouth covered by an artificial denture is kept at a higher temperature than when it is normally exposed. The temperature of the body is maintained at from 98° to 100° Fahrenheit, mainly by the dilatation and contraction of the bloodvessels at the surface, and the cooling of greater or lesser quantities of blood by contact with the atmosphere. When the vessels contract, the interior temperature of the body is raised by the heat produced within being retained at the surface. The mouth, to a greater or lesser extent, being covered by a non-conducting substance, the heat conveyed to the surface is not radiated, and congestion, inflammation, and not infrequently suppuration follow, and a too rapid shedding of the epithelial cells is at once established. In normally exposed conditions, the cast-off cells are

floated away in the saliva as stated above, but if the membrane is covered they remain as irritating substances. The mucous membrane of the oral cavity was designed by nature to be exposed to the friction of mastication and of the tongue, and to be constantly bathed with saliva and mucous secretions. Whether the absence of friction and the exclusion of saliva from the parts affected have hitherto been recognized as contributing factors in pathological changes arising from the presence of artificial dentures in the mouth I do not know, but it would seem that such an interference with normally established functions cannot long be permitted without the gravest consequences. As commonly stated, saliva has to do only with mastication, deglutition, and digestion, but as there is scarcely a moment under normal conditions when the mucous membrane of the mouth is not bathed with it, it is not unreasonable to suppose that it has to do also with the health and vigor of that tissue. We know how quickly this membrane becomes congested, thickened, and oftentimes inflamed, in cases of mouth-breathing. This is due in part, possibly, to germ-laden atmosphere passing over it, but in part certainly to the mucous secretions being quickly evaporated, the glands being paralyzed by over-stimulation and the saliva ceasing to flow altogether, except under the stimulus of mastication.

*Mechanical irritation.* Having considered thus far some of the less conspicuous influences in the pathology of dental substitutes, there remains to be mentioned yet one other, namely, mechanical irritation arising from ill-fitting and unscientifically constructed dentures. It is a well-known fact in pathology that any long-continued irritation may and often does so alter the nature of normal struc-

ture and benign growths as to impart to them a malignant or semi-malignant character. It may and often does cause organic changes and morbid growths without first producing what may be properly called inflammation; that is, it may so modify the conditions of the parts as to give rise to pathological alterations of structure without the production of heat, redness, and swelling. The mucous membrane of the mouth is specially prone to organic changes, and simple hyperemia, spasmodic stricture, labial epithelioma, epulids, and tumors of various forms may and often do result from simple mechanical irritation. Inflamed tissues become morbidly sensitive, and mechanical and other irritants, operating upon an exalted sensitivity, are still more productive of irritation in a pathological sense. No mouth is of a uniform density, yielding to pressure alike in every part, so that in the very act of mastication the unequal pressure brought to bear upon the denture is in itself sufficient to cause trouble, and it is therefore of the highest importance that we approach the construction of these dentures with the fullest appreciation of the possibilities of harm that may be incurred by their insertion in the oral cavity.

#### REFLECTED DISTURBANCES.

The complex association of tissues immediately surrounding the teeth, their diverse physiological functions and significant systemic relations suggest pathological possibilities to be found nowhere else in the human body.

By means of its lining mucous membrane the mouth is related by continuity with the pharynx, esophagus, stomach, and intestinal tract, the larynx, trachea, and bronchi, and by contiguity, as well as by continuity, with

the eyes, ears, nares, and antra. By means of the terminal distribution in and about the mouth of the sensory and motor branches of the sensitive trigeminus, its extensive topographical connections and their association with the great sympathetic nerve, the teeth are connected with the entire organism. It should be remembered that the fifth nerve is the largest of all cranial nerves, that it is the great sensitive nerve of the head and face . . . the nutrient nerve of the teeth, and the motor nerve of the muscles of mastication . . . and, by subdivisions, supplies branches to the eye and eyelids, the nose, the ears, the forehead and scalp, the upper and lower lips, the chin, the gums, the tongue, and the teeth of the upper and lower jaws . . . as well as to the muscles of the face; that its numerous ganglia and its frequent communications with the sympathetic nervous system render possible the most formidable disturbances when from any cause there is an interference with the normal function. Therefore, anatomically considered, the pathological bearings of deranged functions connected with the mouth cannot be easily defined or limited.\*

The mucous membrane lining the mouth, nose, the throat, and the various sinuses connected therewith is continuous, and the same nerve practically supplies sensation to it throughout. In addition, branches of the same great fifth pair supply the eyeball, lacrymal gland, conjunctiva, nasal mucous membrane, and all the muscles and integuments of the eyeball, orbits, os frontalis, nose, mouth, cheeks, lips, temple, superior portions of the pharynx, tongue, and gums—and, acting under a well-known law of nerve force, a disease in any part supplied by one of these branches may be reflected to a part supplied by another branch and there produce not only irritation, but not infrequently disease itself.

It is a well-understood law in pathol-

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\* Dr. J. W. White, "American System of Dentistry," vol. iii.



ogy that sensory impulses originating in one set of nerves may flow through the sensory tract of the medulla and pons and be reflected to parts supplied by an entirely different set of nerves. Thus distant sources of irritation often play an important part in the etiology of disease. This fact is impressively stated by Dr. Samuel Sexton in his work on "Oral Irritation," where he says, "When nerve tension has been long disturbed in this way, reflex phenomena are easily excited; continuous aural, nasal, or dental irritation, even if imperceptible, may affect one part or another, until nutritive (trophic) changes are brought about."

An enumeration of the various diseases that may be thus produced, as classified by Sexton and others, need not here be offered, as it is sufficient to say that all authorities agree that oral irritation of whatever sort is a factor in the causation of diseases of the upper air-tract, as well as the eye, the ear, and the maxillary and frontal sinuses, and a recognition of the reflex influences in diseases of these organs is an important step in their diagnosis and treatment.

#### PRINCIPLES FOR THE CORRECT CONSTRUCTION OF PROSTHETIC PIECES.

Having thus considered somewhat carefully the anatomical and physiological functions of the soft tissues of the mouth and its surrounding parts, as well as the causes and changes leading up to pathological states, some discussion of the technique of the construction of dentures, crowns, and bridges, in order to eliminate as far as possible their deleterious influences, naturally follows: for we must not forget that of all that constitutes dentistry proper, mechanics forms the basis and is the underlying principle

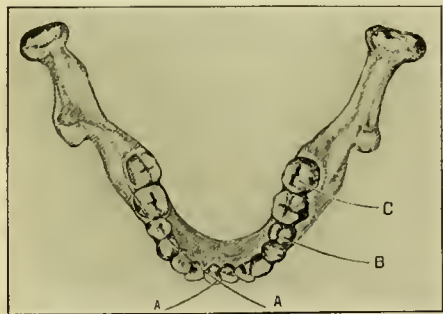
running through all our reconstructive efforts. Yet a dentist must be more than a mechanic; he must be an artist as well and capable of vying with nature, if he is to produce a useful and beautiful dental substitute worthy of our profession. When inserting a set of artificial teeth, for instance, upon which not only the expression of the face but the general health depends, the dentist must consider not alone the laws of mechanics but the beauties of art as well. Perfect construction alone is not sufficient; life and action must be imparted to the case, else the dentist will have failed to attain the highest and truest possibilities of dental prosthesis.

*Bonwill's studies on articulation.* It is still an open question just how nearly combined art and mechanics can be made to imitate the natural movements and expressions of the jaws and teeth, but the investigations along this line by Drs. Bonwill, Davenport, Walker, Bloch, and others have furnished us with a wealth of suggestion which, if appreciated, must carry us a long way toward perfection. No rule can be laid down by which to regulate the beginning and ending of this work. No chart or plan, such as the plate or sketch by which the architect, artist, or sculptor brings forth his ideals has been given to us, and a careful examination of the most artistic and perfect work in this direction fails to reveal any special law in their construction suitable to more than the individual case, though there are certain underlying principles which may be used as a basis upon which to construct all artificial dentures. In a number of articles that appeared in different magazines some fifteen or more years ago, Dr. W. G. Bonwill of Philadelphia presented a system based upon a critical study of the anatomy and



physical functions of the jaws, with an attempt to at least approximate them in the construction of artificial dentures. This system of Dr. Bonwill's starts with the idea that the mandible is an equilateral triangle. (Fig. 1.) True, Dr. Bonwill did not announce to the dental world the theory of an equilateral triangle as a question affecting articulation, but as a fact disproving the evolution of man, by showing that the jaws were de-

FIG. 1.



veloped under a fixed law, existing from the time when God said, "Let Us make man," and unvarying to the present day. To his credit be it said, however, that notwithstanding his justified steadfast belief in miraculous creation, he was not slow to appreciate the value of the idea as it related to dental articulation and occlusion.

I use the term "articulation" not as synonymous with the word "occlusion," but to describe something which cannot be expressed by the latter word. In speaking on this subject before the National Dental Association, at Old Point Comfort in 1899, I stated that—

I am aware that our Committee on Nomenclature has endeavored to establish the principle that these two terms may be used synonymously, or, rather, that we are to elim-

inate the word "articulation," using the word "occlusion" as covering both ideas. I have never been in sympathy with this action of our committee, for it seems to me that it takes but a very slight study of philology to convince one that language is not so made. One of the last judgments in philology is that words are merely arbitrary sounds for the expression and communication of ideas. They were absolutely arbitrary in the beginning, but having become fixed in their application to definite ideas, we cannot change them. Language is not made by using one word to express dissimilar ideas. One word is often used to express a whole group of ideas having a relation to one another, but one word is never used to express ideas of dissimilar character; and for this reason we should be very careful to insist upon the distinction between occlusion and articulation, for they are certainly separate and clearly defined ideas. The word occlusion, as I understand it, means not the act of closing the mouth and teeth, but expresses the condition of the mouth and teeth at rest, while articulation means the act of closing the mouth; the one passive, the other active. So that the two ideas are in no sense to be expressed by one word.

*Anatomical measurements.* In a series of investigations and measurements of many thousand skulls, both naked and living, and including civilized man, Indian, Malay, and prehistoric races, Dr. Bonwill found that the distance from the center of one condyloid process to the other is about four inches on the average, while the distance from this same center of the condyloid process to the median line at the front, where the lower incisor touches at the cutting edge, is also four inches. These measurements vary slightly, but never more than one-fourth of an inch, which in describing the arc of a circle would make but a trifling difference.

Within this equilateral triangle are found from twenty-eight to thirty-two teeth, so arranged that no two strike directly against each other, thus prevent-

FIG. 2.

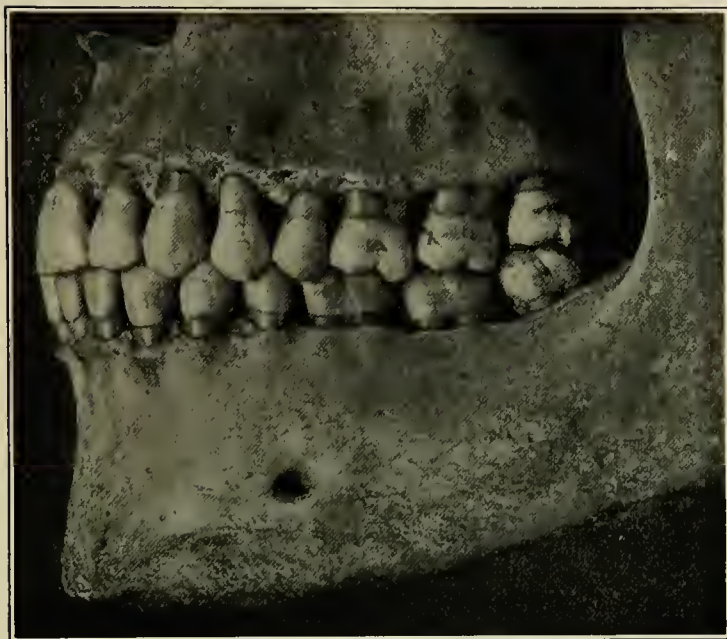


FIG. 3.



ing the whole denture from becoming very irregular. (Figs. 2 and 3.) By this arrangement, also, when one or more teeth are lost, the regularity of the whole denture is maintained, which could not

as the cusps of the bicuspids are deep or shallow, and the ramus will be found to curve upward and backward in relative proportion to the length of the cusps and overbite.

FIG. 4.



be possible if they were antagonizing squarely one against the other. Upon examination it will be found, in about

FIG. 5.



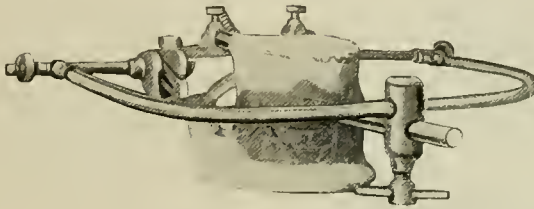
ninety-five per cent. of cases, that the upper teeth project over the lower, not only anteriorly but all the way back, and the depth of the overbite (Fig. 4) varies

In a normal jaw the length of the overbite is from one-thirty-second to one-sixteenth of an inch, and without this arrangement the incisors would lose largely their function, *i.e.* that of incising or cutting the food. From the canines the bicuspids and molars run in nearly a straight line back toward the condyloid process, and are thus enabled to keep the largest amount of surface presented for mastication. (Fig. 1.) In addition to this, a slight curvature will be noticed, commencing usually at the first molar, though sometimes at the second bicuspid, running backward and upward, and always in proportion to the amount of the overbite. (Fig. 5.) This is a provision of nature to carry out more fully the exact laws by which the anatomical movements of the lower jaw are governed in mastication. Without

such an arrangement the teeth would have to be flat on their grinding surfaces, to admit of lateral motion, and the beautiful and wise curvature of the ramus,

tion the condyle, on the excursion side, not only comes forward, but travels downward as well, a fact of the highest importance, and to be recognized

FIG. 6.



for equalizing the force of the teeth applied in that direction, could not be realized.

From an anatomical standpoint, it is interesting when studying this subject to use the naked skull, though except by special preparation it is not possible to get the exact physiological motion of the jaws, for the reason that the glenoid fossa is emptied of its intra-articular fibro-cartilage, its double synovial sacs, and its membranes, forming altogether a thickness of about two or three millimeters, which space will be found in the dried skull between the upper surfaces of the condyle and the roof of the glenoid fossa, so that when the condyle is thrown in the socket, the teeth fail to occlude.

Another excellent method is to select a thin accommodating subject without superfluous flesh on the jaws. In this way the movements not only of the mandible as a whole, but every portion, especially the condyles and ramus, can be distinctly seen and felt.—Dr. W. E. WALKER, New Orleans.

*Articulators.* To Dr. W. E. Walker we are especially indebted for the most thorough investigation and studies of the glenoid fossa and movements of the mandible, and for the discovery of the fact, which seemed to have escaped earlier investigators, that in the act of mastication

in the construction of artificial dentures, a movement yet to be reproduced in an articulator. True, it is claimed for a number of articulators that this has already been accomplished, and in some

FIG. 7.



of them it is measurably so, but in none is it sufficiently accurate to be relied upon in all cases. Probably the New Century, with the face-bow attachment (Figs. 6 and 7) is the most



FIG. 8.



nearly correct of any, and this is made so not because of any special superiority in the articulator itself, but by the face-bow device, which is really a valuable invention of Dr. George B. Snow of Buffalo, N. Y., and is indispensable in the attainment of the highest results in dental prosthesis.

Without going further into the technique of the subject—and I have been able to point out only a few of the underlying principles in the work—I will conclude simply by calling attention to the fact that all these studies lead back to the glenoid fossa (see Fig. 9), a fact which points the way to the ultimate solution of the difficulties surrounding the construction of artificial dentures.

As someone has said—

There is no special study to which we may occasionally devote ourselves with greater

FIG. 9.



promise of return than the temporo-mandibular articulation, for the movements of the condyle constitute such an important factor in so many departments of our work, particularly in its bearing upon the study of the cusps of the natural teeth, with a view to

bettering the articulation, either in artificial dentures or in the treatment of pyorrhea alveolaris, also in the treatment of diseases of the facial muscles, plastic adhesions, etc., as well as in the broader and more extended field of crown and bridge work.

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### DISCUSSION.

Dr. M. C. SMITH, Lynn, Mass. The essayist might just as well have announced that he would read a paper on preventive medicine. When we consider the diseases to which human flesh is heir, and how many of these enter the system through the mouth, we begin to realize the importance of that organ. In practicing in the mouth we should never forget the other organs that are as important as the mouth, and perhaps even more so. In early life I consider the nose to be more important than the mouth. In advancing age the stomach is of greater importance; therefore the organs closely associated with the mouth are to be carefully observed. In early childhood the nose must be in such condition that it can perform its normal functions. With a normal nose in children generally a normal mouth is associated, as a well-kept mouth in the adult is generally associated with a good stomach.

The essayist spoke of the damage done by badly fitting plates. It is surprising how much loss of bony tissue can be produced by the irritation of a badly fitting plate. I would like to refer to one or two cases: A woman who had a badly fitting rubber plate that was causing her trouble

went to one of our hospitals for treatment. The case was examined by physicians and surgeons and diagnosed as carcinoma, and the woman was operated upon. The surgeon removed nearly the entire upper lip, extending from the wing of the nose on one side across to the other, downward and backward, and also a considerable portion of the hypertrophied tissue at the roof of the mouth supposed to be carcinomatous, but rather due to mechanical irritation. He then brought the edges of the lip together without even freeing the parts to give a little surplus tissue for the lip. It was impossible for her without force to get the upper lip within an inch of the lower one. Her upper teeth had all been removed years before, and the irritation had been going on for most of the time that she had been wearing a plate. Upon examination of the mouth it was found that the bony tissue between the mouth and the floor of the nose, from the front backward to the region of the first molars, had all been absorbed, and with a little gentle pressure the finger could be pressed well up into the nasal fossa.

In another case nothing but the maxillary tuberosities were left between the

nasal cavity and the mouth. In such cases the patient's stomach is bound to be affected later in life. There is one point upon which I would like to dwell; that is, the idea current among medical and surgical men that injuries in the mouth primarily due to irritation from a bridge or plate are liable to proceed and form a cancerous growth, generally carcinoma. In all my experience as an oral surgeon I have never seen one case where I have found carcinoma that I could honestly make myself believe was due to mechanical irritation. This is important, since a growth in the mouth under a badly fitting plate should not for one moment be regarded as carcinoma, despite a physician's assertion, until a microscopical examination of it has been made by a competent man. Carcinomas, sarcomas, and epitheliomas, in my opinion, are not due to mechanical irritation. A vital disturbance is back of these growths, but not mechanical irritation.

The space between a fitting plate and the mucous membrane, especially if the plate be left in the mouth for three or four months without being cleaned, is a most elegant medium where micro-organisms grow and multiply with more or less virulence, waiting for an opportunity to gain an entrance into the system, generally through the stomach, thus constituting a constant menace to the health of the patient.

Not long ago I saw two cases of saccharomycosis producing a prolific growth extending all over the mucous membrane of the oral cavity, well back into the throat, and covering the tonsils. Actinomycosis also is frequently found in and around the mouth, especially in badly decayed teeth, in the crypts and cells and on the surface of the tonsils, and on the

mucous membrane under plates that are not frequently washed.

In regard to bridge work, I had a little experience that I would like to refer to. A friend of mine spoke to me of his beautiful bridge work as being the most satisfactory part of his practice. I told him of my surprise at the very poor work that he had been doing lately, and of the great uncleanness of large bridges in the mouth. He disagreed with me, saying that it was the most lucrative and most satisfactory part of his practice.

Let us go back a little, and see how bridge work has developed. In the last few years it has been made largely in the dental laboratories—and that is the curse of the dental profession today, and will be until we sever our connection with the dental laboratory. My reasons for this statement are as follows: An operator takes an impression of a mouth in which five, six, or seven teeth are missing; he sends that impression to the laboratory, and a beautiful bridge, really a work of art, comes back ready to be put in the mouth. Many operators insert five or six teeth on two abutments without any preparation of the teeth. Consequently, no clean, sanitary condition of the mouth can be expected. How many of the operators who are inserting these beautiful laboratory-made bridges today could make them themselves? The fact is undeniable that some operators who cannot make bridges insert them without any preparation of the abutment teeth, and without adjusting the bridges after they have been inserted in the mouth. When he has reached middle life, the dentist has more things to look after than the artistic part of dentistry. When I started bridge work I was told to use pure gold. As that was

not resistant enough, I used 22-karat, then 20-karat, finally 18-karat, all of which would not endure. I was becoming discouraged, as I could see the frailest kind of work done by other operators, in 23-karat gold, lasting year after year, while my work would not last three months. I finally used regulation clasp metal with better success, and finally was able to make durable bridges by the use of clasp metal reinforced with 18-karat gold. All at once, I recognized the reason why the work of other men stood so well. Their bridges were inserted without any preparation, and consequently the mouth became so sore that the patient could not tolerate biting on them, hence they endured from lack of use. In patients past middle life who need prosthetic work, I first think of the stomach and endeavor to make a set of teeth that they can chew with. If I have about eight anterior teeth to repair, I use clasp metal in preference to furnishing the patient something that is artistic, rather endeavoring to secure a good chewing surface that will stand up under the force of mastication.

There is another question we have to take into consideration in our prosthetic work, and that is the fact that when we put too much stress on one or two teeth we can drive them into the jaw. We have to be careful and not overload one tooth, thereby entirely destroying its usefulness.

I wish to recount a little experience which I had only a few days ago. I visited probably the largest research laboratory in the country to obtain a little information as to what is being done in relation to our work. I asked the superintendent if they were doing anything that was of any benefit to us dentists,

and he said, "No, we are doing nothing at all that would be of any interest to you whatever." "Well," I said, "might I ask what you are doing?"—inquiring if they were doing anything in the line of cancer research work. He said, "No. At the present time we are working on the pneumococcus and the spirochæta pallida." I replied: "Don't you think that these subjects have something to do with dentistry? Did you ever consider that ninety per cent. of oral diseases in which pus is present are due to pneumococcus infection?"

He repeated that they were doing nothing of interest to dentists. I then asked him what work they were doing with the pneumococcus, and his reply was that they were studying the condition of the micro-organism at the period of crisis. I asked him if he did not think that the presence of the pneumococcus in the mouth was a menace to the health, and might have some relation to, might even be a possible source of infection of the lungs, and suggested that if no attention were paid to this aspect of the question there might not be any crisis to take place.

Dr. H. C. FERRIS, Brooklyn, N. Y. We have just listened to a very interesting paper, which bears the distinction of being both scientific and practical, and in which the anatomy and physiology of the mucous tissues with their reflex influence under pathological conditions have been reviewed. Preventive medicine, or rather the prevention of medicine, is the keynote of scientific study of the human body today. No other specialty in the healing art requires study more than does the organ of mastication, the front door of the alimentary canal, and we should try to hold up the sign, "Please wipe



your feet before you enter, that you may not injure the carpet of the stomach."

You note that I dignify the oral cavity with the term "organ," and in defense of my position would challenge any anatomist to demonstrate any more powerful functioning section of the human organism. It contains the highest organized animal tissue, forming its crushing organs, powerful muscles to operate them, a quantity of secretion with complex physiological properties and chemical actions upon food, the value of which has been underestimated in the chemical observation of digestive changes.

Dr. Butler has brought the normal physiological action of the mucous tissues clearly before us, and I have no doubt that, had he been allowed sufficient time, he would have been pleased to go into the morphology of the individual exfoliated cell. The advanced work in physiology has resolved itself into the study of this individual cell, its structure, nourishment, and normal environment. Without the latter we have disturbance in function, and our very existence is at stake.

The blood with its floating cells affords the best field for this investigation, as the influence of absorbed chemicals upon the structure of the leucocytes and liquor sanguinis modifies the secretions of the body, which of course includes the salivary secretions. Poison the blood, and you modify the saliva and increase the exfoliation of the epithelial tissue, and bring about pathological changes in the oral cavity.

Artificial dentures modify the atmospheric pressure where they are in contact with the epithelial tissue and produce a hyperemia, as the essayist has

stated. They further interfere with the functions of the myriads of mucoid glands and modify their secretions, as we know by clinical experience that these patients have a high salivary viscosity. We can all recall cases where a woman patient has worn an upper set of teeth at night because she did not want her husband to see her without them. In these cases the roof of the mouth looked like a piece of raw beef, and the saliva like syrup. These patients invariably suffer from indigestion as the result of the modified saliva, and from the loss of normal masticatory function owing to the tenderness of the parts.

It is true that the cusps of the teeth help to hold them in their normal positions, but I cannot agree with the essayist that when one, or more teeth are removed, the remaining teeth retain their positions. On the contrary, from the time of the removal of the teeth a modification of the arch takes place, regardless of age. Even if the four third molars are removed, both arches will be carried distally, owing to the contractual action of the muscle mask of the face. When the first and second molars are removed, the second or third molars will tip forward and break up the articulation, allowing the chin to come closer to the nose, and separate the upper incisors.

A case from practice will illustrate another of the reflexes that have been mentioned by the essayist. An elderly lady suffering from facial neuralgia was treated for nine months by a physician, with a trained nurse in attendance. She was poulticed and dosed, and at the end of the nine months I was called to repair a broken tooth on her plate. I found a lesion on the buccal surface, with a fold of tissue, and the plate cutting into it

a quarter of an inch. I cauterized this surface and cut down the plate, after which the patient's pain disappeared. We can cite many instances of this description from our practice.

Dr. Butler speaks of "occlusion," and I agree with him that it is a misused term. The orthodontists, however, have another conception of occlusion; it is the ideal position of the teeth in relation to the whole head, and the position of the artificial teeth marks the difference in the artistic conception of the individual operators, while the term articulation is to be used when the teeth are in contact.

Dr. Butler does not mention the Gysi articulator, which I believe presents some features of improvement over the Twentieth Century articulator. One of these features is a little pencil attached to the upper base-plate, and a carbon-covered plane on the lower.

In conclusion, I wish to reiterate the statements that I have made before, that the mandible is subject to influences even in advanced years, and that the different dips of the condyle could be modified by distribution of muscular forces to bend this bone and alter the dip of the condyle by a series of plates with different lengths of bite. We have all seen poorly articulated plates, after several months' wear, adjust themselves to a greater difference than could be accommodated by the soft tissues.

I wish to compliment Dr. Butler for his timely call of our attention to this much neglected part of our specialty.

Dr. JAMES McMANUS, Hartford. I do not feel competent to discuss this paper, but feel that we all owe to Dr. Butler our thanks for his very carefully prepared, scientific, and practical paper. I recall that, years ago, when I was a young man, speaking in regard to opera-

tions that were performed in the mouth at that time, Dr. Atkinson made the remark that the mouth would tolerate almost anything. We know that, under the conditions that have existed for the past few years, the operations have not improved in the least over the old-time operations of the older practitioners. We have had given to us any quantity of appliances, and ought to be able to do infinitely better work than we are doing, but we all know that a lot of work is being performed that never should be done, and how it is tolerated is a mystery to me. There are many cases, as Dr. Ferris has said, where people get accustomed to an ill-fitting appliance or denture, grow into the appliance, as it were. If the appliance does not properly fit his mouth, the patient changes his habits of using the muscles of the mouth, and adapts himself to the appliance; so that, as Dr. Atkinson said, the mouth will tolerate work that never should have been put into it.

The *motif* in Dr. Butler's paper, in my opinion, is his desire to impress upon our minds the necessity of studying the anatomical conditions of the mouth and jaws, the necessity of artistic and perfect work, and of impressing upon the patient the importance of perfect cleanliness at all times. The vital principle of all the papers that have been offered at this meeting seems to have been the absolute cleanliness of the mouth.

I think I was scheduled as the last speaker on the program in order that I might have the pleasure of asking the association to pass a vote of thanks to the gentlemen who have come from long distances and have given us such splendid papers. I therefore move that we extend to our visitors our sincere thanks for their very valuable papers.

The motion was seconded and unanimously carried.

Dr. A. J. FLANAGAN, Springfield, Mass. I want to thank Dr. Butler for having summoned the courage and the interest to present his paper, yet I think that we might obtain better results for the benefit of humanity if Dr. Butler would assemble the owners of the twenty-nine dental laboratories in New England—or rather the couple of hundred men in these laboratories who are making prosthetic work for the profession—and give them a lecture. While the essayist's paper was most scientific, the plan that I suggest would really be more beneficial in its results to humanity, because in my opinion dentistry has arrived at a certain crisis in relation to prosthesis. The dental student's ambition is not prosthesis. The requirements of the state boards in regard to any practical demonstration of prosthetic work are very lax. There are states that require an affidavit to the effect that the candidate has made a plate or two, but it is an easy matter to secure someone to sign that. Other boards require that the candidate shall bring a case ready to be soldered. Any number of boards require no practical demonstration of prosthesis, but hold purely theoretical examinations. As a consequence, the idea is inculcated in the mind of the average student at the present time that, in order to pass the state board examination, he need only attend lectures and get a certain amount of the theory of prosthesis, go to the laboratory and do the least amount of practical work possible. His fellow students tell him that it is not worth while wasting time on this work, because it is not required in the examinations. There is the beginning of the crisis. Next this man begins practice, and immediately, as, for instance,

here in New England, he receives circulars from many of the twenty-nine laboratories catering to the dentists for their prosthetic work. All the young practitioner has to do, if he believes what is advertised in these circulars—backed up by the inability of the dentist—is to take an impression and a mush-bite, such as Dr. Butler spoke of, and send it to the laboratory, and the case is sent back to him finished.

I have for the last few years been looking up the statistics in this respect in New England, and am preparing a report for a state society. I have talked to the owners of laboratories, and seen the specimens of impressions and written accompanying directions sent by dentists. While these conditions exist, what is the use of Dr. Butler and a great many other men wasting their time and energy in offering such papers to what should be a profession of prosthetists?

We call ourselves a profession, but no body is a profession if it fails to fulfil the requirements of a profession. Dentistry has been built for years, and has stood as a cone, but this cone has been inverted, so that it is balanced on its apex, *i.e.* mechanics, while its base represents pathology and therapeutics. Why should we not invert that cone, and put mechanics at the top? The time is coming, in fact has arrived, thanks to the efforts of the men who are working along the line of prevention and oral hygiene, when our profession is compelled to have for its foundation pathology and therapeutics. Take Dr. Butler's paper and "compare, reflect, record" with the too well-known conditions underlying prosthesis at the present time. It is well worth while for us to think of the conditions existing in dentistry today along these lines, and consider the future, and

think of the standing we have occupied in the past. Does the future, as judged from the present, prophesy true professional advancement?

Dr. BUTLER (closing the discussion). In closing this discussion, I shall have very little to say beyond thanking the gentlemen for assisting me in bringing the subject so clearly before you.

The remarks of Dr. Ferris were very helpful, as were Dr. Smith's reports of practical cases, in which conditions caused by mechanical irritation were interfered with surgically without necessity. I am also in full sympathy with his criticism of certain kinds of bridges.

As to Dr. Flanagan's remarks about dental laboratories, I would remind him that these places flourish solely because ethical men turn their prosthetic work over to them. Therefore it is the ethical men of the profession, just such men as are here today, that need to be labored with and made to realize how degrading this practice is, and also how great the risk they assume in continuing it.

The PRESIDENT. I think this association owes a considerable debt of gratitude to the newspapers of Hartford for the courteous manner in which our proceedings have been reported in the *Hartford Times*, the *Post*, and the *Courant*. It is a pleasure to me to note the difference in the spirit with which our proceedings and our body seem to be regarded by the public press as compared to a few years ago, and I would like to hear a motion offered thanking them for their kind attention.

Dr. RIGGS moved that the thanks of the association be extended to the newspapers of the city for their courteous treatment of the society during the meetings. (Motion carried.)

The PRESIDENT. On account of the unavoidable absence of Dr. Brown of New Haven, whom I appointed on the Nominating Committee, I will appoint Dr. Griffith in his place.

Motion was made and carried to adjourn until the afternoon session.

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### WEDNESDAY—Afternoon Session.

The meeting was called to order on Wednesday afternoon at 2.30 o'clock by the president, Dr. Murlless.

Dr. HINDSLEY, chairman of the Nominating Committee, presented the following list of nominations for officers for the ensuing year:

*President*—R. H. W. Strang, Bridgeport.  
*Vice-president*—E. J. Abbott, Waterbury.  
*Secretary*—A. V. Prentiss, New London.  
*Treasurer*—C. H. Riggs, Hartford.  
*Librarian*—F. G. Baldwin, New Haven.  
*Editor*—G. S. B. Leonard, Mystic.

Dr. McLEAN moved that the report be adopted and that the secretary be empowered to cast one ballot for the entire list of nominations. (Motion carried.)

The PRESIDENT. It is customary, and a very agreeable custom it is, and one in which we take considerable satisfaction, to offer at this time a vote of thanks to Dr. Anthony, the representative of the *Dental Cosmos*, for his work as reporter of our proceedings, and a motion to that effect will be in order.



Dr. R. H. W. STRANG. I move you, Mr. President, that we offer to Dr. Anthony a vote of thanks for his efficient assistance to our association.

(Motion carried.)

Dr. JAMES McMANUS moved that the association offer a vote of thanks to Senator Bulkeley for his valuable aid in securing for the army dental corps commissioned rank.

(Motion carried.)

Dr. CHARLES McMANUS. I have a telegram from Dr. A. D. Black asking that the society take some action with regard to the proposed Dental Index Bureau, and I move that this communication be received and referred to the Board of Censors with power to act.

(Motion carried.)

Dr. BEECHER. I move that a vote of thanks be extended to Dr. Spang for the excellent condition in which he has left our treasury.

(Motion carried.)

The next order of business as announced by the President was a lecture by Dr. L. S. CHILCOTT, Bangor, Maine, entitled "Treatment of Fracture of the Mandible."

Motion was made and carried that a vote of thanks be extended to Dr. Chilcott for his very interesting and valuable contribution.

Dr. GAYLORD presented a communication to the association from the Committee on Reorganization of the National

Dental Association, and asked that the association appoint a delegate and an alternate to represent the Connecticut Association at the National meeting in connection with the work of reorganization of the National body.

The next order of business was the installation of officers.

Dr. MURLLESS appointed Drs. Strang and McManus to conduct the newly-elected president to the chair.

Dr. R. H. W. STRANG, in accepting the gavel of the association, said:

*Members of the Connecticut Dental Association and friends,*—I accept the honor which you have conferred upon me and thank you very much for the confidence you have expressed in electing me to preside over this body for the coming year. I feel that the retiring president has set a very high standard, and that it will be very difficult to equal the meeting we have had this year, but I ask your co-operation to the end that we may make the forty-eighth annual meeting as profitable as this one has been, and even more so if possible.

Dr. MURLLESS. I omitted to say before surrendering the gavel that I appreciate more than I can express the assistance in the work of preparing this meeting rendered by the men who have been associated with me, and on behalf of this association I thank them thus publicly.

Motion was then made and carried that the association adjourn until the next annual meeting.













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